Report of the
Chief Inspector of Mines in India
under the Indian Mines Act (VIII, 1901)
for the year
1908 to 1913

00134445

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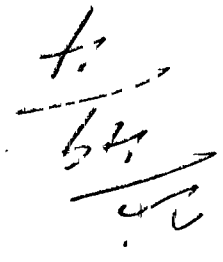

Department of Mines, India.

REPORT

OF THE

CHIEF INSPECTOR OF MINES IN INDIA

Under the Indian Mines Act (VIII Of 1901)

FOR THE

YEAR ENDING 31ST DECEMBER

1908 & 1913

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BY

J. R. R. WILSON, M.I.C.E., F.G.S.,
Chief Inspector of Mines in India

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FROM

J. R. R. WILSON, ESQ., M.I.C.E., F.G.S.,
Chief Inspector of Mines in India,

TO

THE SECRETARY TO THE GOVERNMENT OF INDIA,
DEPARTMENT OF COMMERCE AND INDUSTRY.

Dated Dhanbaid, 15th June 1909.

SIR,

I have the honour to submit the report upon the inspection of mines in British India for the year ending 31st December 1908.

EXPLANATORY INTRODUCTION.

For the first time this report is dated from the edge of the Bengal coal-fields. On the 20th April this year the Department of Mines was transferred to Dhanbaid, a station upon the East Indian Railway, 169 miles from Calcutta, where suitable offices have been erected within easy reach of the Jharia coal-field and easily accessible to the Mining people of Raniganj. I hope the change may be wholly one of benefit to those whom it is meant to serve.

It is necessary to explain that this is a report relating entirely to the administration of the Indian Mines Act, 1901, and is not a complete statistical review of Indian Mining and analogous industries.

No official publication embodying such statistics is at present issued for India, but a review of the mineral production of India in the form of a Quinquennial Review by the Director of the Geological Survey of India will be published this year. Figures for Mysore, where most of the Indian gold is raised, are given in the Report of the Chief Inspector of that Native State, and mineral statistics may also be found in the administrative reports of the various Presidencies, Provinces and States of India.

It should be remembered in reading the statistics that there must be a considerable output from quarries which are under 20 feet deep; and owing to the exclusion of such places from the scope of the Mines Act these figures should not be regarded as a complete index to the production of mineral wealth of the country.

The report is divided into five Sections, *viz.* —

Section	I.—Persons employed.
,,	II.—Output of mineral.
,,	III.—Accidents.
,,	IV.—Prosecutions, discipline and additions to the Act.
,,	V.—General Remarks.

Section I.—Persons employed.

During the year 1908 the average number of persons working in and about mines regulated by the Indian Mines Act, was 164,301, of whom 102,451 worked underground and 61,850 on the surface; 103,322 of the persons were adult males, 54,518 adult females and 6,461 children under 12 years of age. Compared with the preceding year an increase of 8 per cent. or of 12,318 workers is shown. The ratio of increase is less than that of last

year, and is accounted for chiefly by the reduction in the number of persons employed at mica and manganese mines, the number of the former being slightly less than in 1906; while at the latter there is a reduction of 2,335 persons.

The number of persons employed at coal mines has increased by 16 per cent.; practically the same ratio of increase as the output of mineral. Apparently the Indian miner has not yet reached that stage of ambition when he wishes to increase his earnings. As by filling one tub per day he can obtain quite sufficient to meet all his needs, it does not dawn upon him that by filling three he might be steadily placing himself beyond the risk of want. Unfortunately, the output per person is kept very low by the man who fills most working the least days. The Indian miner is not an economist, either political or domestic; and his logic is of the simplest—that his labour should be regulated only by the eating and drinking capacity of himself and family. Some day he may become educated and aspire to better things, even to the point of placing a higher value upon his labour. In the meantime there is room for missionary effort. Some mine managers have discovered the hidden possibilities of the miner; and, under their guidance, he has learned to work better and to show that he can appreciate the difference between a squalid hut and a clean and comfortable dwelling.

Section II.—Output of mineral.

Reference to the tables given in Appendix II shows that there has again been a gratifying increase in the output of coal and limestone, but only a slight increase in mica; while the output of manganese has decreased by 22·91 per cent.

COAL.

The coal industry in India has now assumed very important proportions; the increase is again very marked, the output having exceeded that of the previous year by over $1\frac{1}{2}$ million tons.

The output was 12,149,020 tons as compared with 10,526,468 in 1907, an increase of 15·41 per cent.; practically the same rate of increase as was reached last year.

Of the total 11,559,911 tons or 95·15 per cent. were raised in Bengal, exceeding the output of the preceding year by 1,566,563.

There is no doubt that these figures, large as they are, would have been materially increased but for the almost complete cessation of work for two months owing to the severe outbreak of cholera in the coal-fields. From careful enquiries made at the larger collieries I estimate the loss of output at over 1 million tons. Prices at this season of the year were very remunerative, and the loss to the industry must have been quite 50 lakhs of Rupees.

A glance at Table 8 in Appendix II will show that India, without taking into consideration the output from mines in Native States, still easily maintains her position at the head of the coal producing dependencies of the British Empire.

A comparison with last year's figures will show that the increase comes mainly from the Jharia coal-field, where the output has gone up over $1\frac{1}{4}$ million tons, Burdwan this year having an increase of only fifty thousand tons.

Pench Valley in the Central Provinces maintains the progress shown last year and has exceeded the previous year's total by 61 per cent.

The coal trade of Bengal was extremely flourishing until near the end of the year, the state of the industry being reflected in the inflated prices quoted for colliery stock. "Coal shares" was a favourite topic of conversation with every section of the community, and indignant shareholders complained through the newspapers that their dividends were not more than 50 per cent. The Indian proprietors might very usefully learn a lesson from English coal owners and utilise the handsome returns to build up reserves, instead of disposing of all the earnings in dividends.

It cannot be a wise policy to dispose of all available revenue and in a few months be hampered in development for lack of funds.

MICA.

There is an increase in the output of mica of 1,289 cwts. Like last year Hazaribagh has increased its output; while Madras has again fallen, this year the decrease being 4,516 cwts.

There was a great falling off in the demand towards the end of the year, and several of the smaller mines closed down.

MANGANESE ORE.

The flourishing condition of this industry shown by the figures for the year 1907 has given way to one of depression. Foreign competition asserted itself to such an extent that prices receded considerably, and many mines were unable to continue working at a profit.

The figures for 1907 were 642,082 tons, while last year they reached only 494,942 tons, a decrease of 147,140 tons. Of this diminution of output 113,375 tons is accounted for in the Central Provinces, which made such strides in the previous year; while Madras has a decrease of 36,108 tons.

In the Bombay Presidency the output has risen from 19,689 tons in 1907 to 22,032 tons in 1908.

GEMS.

The output of gems from Burma has again decreased; in 1907 the total was 296,125 carats, while last year it only reached 211,194. The output is entirely from the Mogok Mines of the Burma Ruby Mines, Limited. This is the only company working on a large scale, but there are very numerous mines and washings in the Mogok district worked by Burmans who have hereditary rights. The native worked mines are excluded from the scope of the Indian Mines Act.

GOLD.

This year there is an output of 7,242 ounces of gold to record, all from the Dharwar goldfield.

This mining field lies in a hilly tract some eight miles south of Gadag in the Dharwar District of the Bombay Presidency. The present limits of the area within which mining is carried on are about five miles long by four miles broad, and the southern portion of the area and one of the mines lie within the borders of the Sangli Native State.

The gold-bearing veins are found in a belt of the same schistose complex of rocks of Archean age as are all the known deposits of vein gold in India. To these rocks the name of "Dharwars" has been given by geologists. They appear to be chiefly ancient sediments which were originally deposited on a gneissic floor and have subsequently been extensively folded by earth movements acting in an east-west direction. Long ages of denudation have now left them as meridional peninsulas of foliated rock separated by wide areas of gneiss.

In the Gadag band the gold occurs in veins of white quartz which commonly conform to the foliation planes of the schists. The principal veins occur in argillitic schist and are associated with graphite which, though small in quantity, is sufficient to give the kaolinic vein matter accompanying the quartz a black colour and slippery lustrous surface. The latter feature is one which calls for great care in the prevention of falls of ground during mining operations.

Extensive mining work was carried on within this area by ancient miners of whom not even a traditional record remains. Eight companies are now at work, and nine mines are in more or less active operation.

The sanitation of this field is well organised. There are two European doctors with ample hospital accommodation containing all necessary appliances.

There was an outbreak of cholera during the year, but it was not very serious. Ankylostomiasis still forms a large percentage of the cases of illness.

Work was also carried on in the Anantapur goldfield, but no ore was crushed during the year.

OTHER MINERALS.

Limestone again shows a considerable increase, while the output of salt has diminished.

The Copper mines in the Central Provinces have just reached the producing stage, but the quantity returned is only 10 tons.

Tin in Burma is only half the quantity returned for 1907, and the Chromite worked in Baluchistan has dropped to 1,000 tons for the year.

Section III.—Accidents.

GENERAL REMARKS.

During the year 1908, at mines regulated by the Indian Mines Act, 1901, there were 135 fatal accidents involving the loss of 194 lives, being an increase of 72 over last year's total. These are very serious figures from whatever point of view they are regarded; whereas in 1907 the death rate was 10·74 per million tons raised, last year it was 15·08. At coal mines only the death rate was 8·45 in 1907 and 13·58 in 1908 per million tons raised. The death rate per 1,000 persons employed works out to 1·37, while in the preceding year it was only ·86. It is true that 20 men were lost in a single accident in one mine and 15 within a week at another, yet the abnormal activity in the coal trade accounts for much of this sacrifice of life. The desire to increase raisings; the frequent attempts to get easy coal regardless of safe conditions, particularly trespassing to rob pillars; the casual way in which work people wander about the haulage roads in Bengal mines and the large amount of untrained labour is responsible for much of the increase. Of the persons killed 153 were males and 41 females. In addition to these deaths, fatal accidents to 27 persons who were not engaged at the mines were reported.

A list of these appears in Appendix I, and reasons are given for their exclusion from the statistical tables.

The deaths occurring in each mineral working were as follows:—164 in coal; 3 in mica; 5 in manganese; 9 in limestone; 2 in ruby; 1 in slate; 8 in gold; 1 in chromite; and 1 in copper mines. Of the persons killed 22 lost their lives by explosions of fire-damp; 88 by falls of roof and side; 27 in shafts; 8 by explosives; 22 by haulage; 27 by other accidents below-ground, and 20 on the surface.

Each fatal accident is briefly described in Appendix I, but the following additional remarks and explanations are necessary.

EXPLOSIONS OF FIRE-DAMP.

In last year's report the note under this heading was commenced in a strain of congratulation that India had so far escaped any great calamity from explosions of fire-damp. Unfortunately, that record has been marred, and there has to be chronicled an account of a disaster in Baluchistan which was not more terrible in its results only because the mine was small and the number of workers limited in consequence. This is No. 1 in the list, which happened at about 10-30 o'clock in the morning on the 16th June 1908 at Nadir Khan mine, Khost Colliery, belonging to the North Western Railway.

Before making any observations on the causes which led up to the explosion a brief description of the Nadir Khan mine may elucidate the points raised. It consists principally of two main inclines driven in the seam, which is only 2 feet 6 inches thick, 580 feet in the full dip of 53° and connected at intervals of 60 feet by cross-cuts or kamanis. These kamanis are numbered

in descending order. A glance at the plan attached will show that No. 4 is continued westwards into the solid coal for a distance of 150 feet; and parallel to it, 40 feet to the rise, is another road called a service kamani, which is connected to the lower kamani by two stentons: opposite the first stenton a long wall face 40 feet long has advanced 12 feet to the rise. These comprise the upper workings. The lower workings consist of two pairs of headings, one driven a distance of 120 feet east and the other a distance of 60 feet west off the Main and Back Dips respectively. A small diversion from the bottom of the main dip is being driven in stone to form a passbye for tubs. The whole of these workings were affected by the explosion.

During the last four years the mine has been gradually developing and extending further into the seam, without any attempt having been made to create a current of air through the workings. The management depended upon natural ventilation and considered it efficient; although tests made subsequent to the explosion under conditions approximating to those on the day of the disaster proved the air in the mine to be stagnant.

It is not to be wondered at therefore, that the lower workings were unprovided with means for directing a current of air into the working places.

It is notorious that the Indian miner can luxuriate under conditions which would be almost fatal to Europeans. Here he had opportunity.

The coal is hauled up the Main Dip by means of a haulage engine at the surface. The tubs are taken along the lower levels in each case, and the coal from the top levels is sent down a shoot, at the bottom of which is a shutter to regulate the supply to the tub. These shoots create a large amount of powdery coal dust which settles upon the timbers and sides of the roadways. The volatile matter in this coal is very great reaching as high as 45 per cent. Unbonnetted Clanny safety lamps are in use throughout the mine; they were adopted, however, I am informed, on account of risk from fire and not as a protection against explosive gas.

As soon as I heard of the disaster I proceeded to Khost accompanied by Mr. G. C. Leach, Inspector of Mines, No. 2 Circle, and we reached the mine on the afternoon of the 23rd June and immediately went underground and made an inspection of the workings; the whole of the workings were further examined on the 26th, 29th, and 30th June and 1st July. I held an enquiry at Khost on the 24th June and examined all available witnesses, and came to the conclusion that the explosion originated in one of two places marked respectively A and B upon the coloured plan of the mine, and was caused by an ignition of fire-damp at a miner's lamp; being propagated throughout the mine by the agency of coal dust. On the morning of the accident the mine mistry made his usual examination when no one was in the mine, and then returned to the surface. He reports having found no gas; but it is very doubtful if he looked for any. The workers, 22 in number, descended about 7 A.M., and some time between ten and eleven o'clock the explosion occurred. Two men who were 260 feet down the Back Dip were the only persons able to escape; they were both burnt, but were able to climb up this steep incline to the surface.

The officiating manager happened to be absent at the time, but on his return a few hours later, he was successful in penetrating the mine, and at 8 A.M. next day all the bodies had been recovered. The positions in which the bodies and lamps were found are marked upon plan No. 2. I am indebted for this information entirely to the mine officials. With the exception of a carpenter named Akhtar and the two survivors, who were engaged in repairing ladders in the Back Dip, none of the men seem to have been in their working places at the time, and, what is equally extraordinary, practically none of them had done any work that morning.

The haulage engine man at the surface stated that he saw stones and dust blown from the mine. There was evidence of force all the way down: stoppings being blown out; timber dislodged; and at No. 4 kamani a heavy metal plate (plan No. 3) was lifted up, and afterwards, three tubs which were in the kamani, were blown beneath this plate, one of them rolling to the bottom of the Main Dip.

On our inspection on the 23rd June we found accumulations of gas in a cavity in the roof at the end of the bottom west level, and considerable

accumulations at the ends of each of the east levels. At this time artificial ventilation had been created by means of a furnace at the surface; so it is reasonable to assume that without ventilation there were similar accumulations at the time of the explosion.

In the bottom west level at the point marked A (plan No. 1) a stenton had been commenced uphill, contrary, I believe, to the usual practice. At this place the officials state they found two lamps, one lying upon the floor with a broken glass and bent gauze, and the other standing on its bottom upon a cross timber, level with the ordinary roof.

It is here where the breaking up made a cavity in the roof of some 20 cubic feet that the management think the explosion originated.

There were signs in this level of considerable force in a direction outbye; a tub was probably blown 24 feet outbye and was the means of knocking two men into a sump.

The coked coal dust however was spread heavily upon the outbye side of the timbers, until near the Main Dip, where the thickness of the deposit was in the reverse direction; but there were signs of burning on the inbye side of the timbers.

Pieces of stone were embedded in the inbye side of the timber near the level face, but these may have been projected from shots during blasting operations.

The evidences of coking were exactly the same in the east level opposite. In the service kamani No. 8, two lamps were said to have been found hanging by cords from a roof bar at the top of the working stenton. At this point we found burnt clothes on the bar and further outbye a burnt puggree. Of the lamps mentioned, one had a loose gauze (it would slide down into the glass) and was also the only gauze which showed signs of having been burnt. Near the face of this level the coking was slight, but increased outbye past the Back Dip, all on the inbye side. The two miners who should have been at work at the bottom of the dip stenton were found at the bottom of the Back Dip, having either been blown or fallen down.

In the west level on No. 4 kamani was perhaps the greatest exhibition of force. In the top level the greater part of the timber was blown out, the shoot from the stenton was dislodged and spread into the lower level. Near the face of the latter were signs of burning on the timbers on the outbye side and coked dust heavily deposited upon the inbye side. A stopping in the Back Dip was blown out, and 3 tubs from No. 4 kamani blown outbye with such force that they were bent at the outbye ends.

It is interesting to note that the carpenter Akhtar was working in the Back Dip opposite to the long wall face level. The two survivors state that Akhtar lost his light and placed it at the end of the level. One of them then took him the only remaining lighted lamp, and as soon as this man had rejoined his mate, 20 to 30 feet higher up, he says: "There was a report like a cannon and we were blown off our feet up the incline."

The coal dust evidence is very conflicting: the deposits seem to be heaviest where the dust was likely to be thickest; that is, at the top and bottom of the shoots and at the bottom of the Main Dip, where the tubs were attached to the rope.

The stoppings were blown in both directions. In descending order No. 1 was intact; Nos. 2 and 3 were blown inbye; sheet at No. 4 was not found, but the tubs were blown outbye; Nos. 5 and 6 were blown inbye; No. 7 was blown outbye, and cloth at No. 8 was not found.

Plan No. 2 shows the positions in which the officials say they found the bodies and the various lamps.

The evidence as to the conditions of the bodies was obtained by carefully examining the few men who removed them. It may not be very reliable. Nos. 2 and 4 belonged to the two lamps shown at the end of west level No. 8. No. 1 was found near the two lamps at the end of the bottom west level.

Three men were found with their heads inbye on the bottom east level, while their lamps remained at the bottom of the main dip. With the exception of Nos. 18 and 20, all the men were found close together. The explosion was not due to blasting; it may have been caused by a naked light, for out of the twenty lamps found, eight were unsecured.

If it originated in the bottom west level it failed to shake a lamp off a piece of timber.

Gas was previously seen in the mine a few months ago, when it fired at a shot hole; it is found, however, in the adjoining mines working the same seam.

CONDITIONS OF BODIES AFTER RECOVERY.

1. *Taj Mahomed.*—Jemadar. Mouth crushed; wound in right groin.
2. *Jellani.*—Miner. Mouth crushed and breast slightly burnt with coal-dust.
3. *Abdul Majid.*—Miner. Moustache and hair singed; breast and arm burnt. Wound in leg.
4. *Atta Mahomed.*—Miner. Eye knocked out. Breast and right leg burnt.
5. *Ajab Gul.*—Miner. Not injured at all.
6. *Nobijan.*—Miner. Not injured at all.
7. *Mir Alam.*—Trammer. Hand, foot, mouth and hair burnt badly.
8. *Saleh Mahomed.*—Trammer. Breast and back burnt and also under arms. Cheeks of pinky shade.
9. *Jalal-ud-din.*—Tram coolie. Both legs, both arms, mouth, breast, clothes and little hair burnt.
10. *Sheik Ali.*—Miner. Slightly injured, but not burnt.
11. *Kaka.*—Miner. Whiskers, hair, hand, leg and breast burnt.
12. *Malla Singh.*—Carpenter. Not injured at all.
13. *Abdul Guphar.*—Carpenter's coolie. Mouth crushed. Breast and back singed.
14. *Din Mahomed.*—Carpenter's coolie. Blood issuing from mouth.
15. *Jamala.*—Miner. Blood from mouth, and breast singed. Cheeks of pinky shade.
16. *Taj Mahomed.*—Miner. Mouth crushed.
17. *Ghazi Khel.*—Miner. Mouth, hand, leg and breast burnt.
18. *Hassain.*—Miner. Leg, face, and head scratched.
19. *Nazar Ahmed.*—Miner. Face, leg and hand crushed badly.
20. *Akhtar.*—Carpenter. Leg, arm and neck broken; head smashed. Also burnt in the right half of his back.

No. 2 in the list occurred at No. 1 Chanch mine belonging to the Bengal Coal Company, Limited. A few years ago gas was discovered in this mine, so safety lamps of the Marsaut type were put in. The officials state that they have not seen any gas for two years. On this occasion the deceased was cutting roof coal at a height of 8 feet 6 inches from the floor and was taking forward a lip of coal about 18 inches deep. He was mounted upon an upturned tub, and when last seen his lamp was hanging on the side of the road a few inches from the roof and immediately behind him. He had been working for several hours under these conditions. The force of the explosion knocked his lamp off the side, and the flame severely burnt him on the back of his body, arms and legs; while the report woke up a sleeping miner in the next working place.

The flame apparently came from behind the man, and the only light in that direction was the safety lamp.

When Mr. Leach investigated the accident the lamp could not be identified, but the manager had already condemned two or three gauzes because they had been burnt.

The most probable explanation is that gas steadily accumulated and burnt in the lamp until it heated the gauzes and ignited the gas outside. Mr. Leach estimated the quantity in the cavity at about 12 cubic feet, and the flame reached to 15 or 20 feet away; gas was still giving off when the Inspector visited the mine 5 days after the explosion.

The Indian miner is not familiar with the safety lamp, but where it has been adopted some attempt should be made to teach him the elements of its uses.

A good current of air was travelling in the mine, but none was passing near this gallery.

Had this been a dusty mine, the results might have been extremely disastrous.

FALLS OF ROOF AND SIDE.

Accidents from this cause resulted in the death of 88 persons, an increase of 31 upon the previous year : 71 of the deaths occurring in coal mines; 57 of the deaths were from falls of roof, and 31 from falls of side.

No. 4 in the list took place in the top section of No. 15 seam at the Budruchak Coal Mining Company's Budruchak mine in the Jharia coal-field and was undoubtedly due to the desire to meet the increasing demand for coal in the earlier part of the year. The mine had been standing full of water for about three years and had only been reopened a few months when the accident happened. The gallery was originally 11 feet wide, and workmen were taking side off the pillars to make it 15 feet wide, when an unforeseen slip running from the pillar into the roof allowed a length of 41 feet of roof to fall suddenly.

When pillars have been standing for such a length of time and water logged into the bargain, slips might reasonably be anticipated without waiting for the roof to fall.

No. 15 in the list happened in No. 13 seam in a shallow incline working at the Sinidih Coal Company's Sinidih mine, Katras district. The deceased was at work for the first time in that mine, and probably for the first time in any mine. He discovered that cutting away a pillar corner was easier than getting up floor coal which he was supposed to be doing; and the result was to allow a portion of the roof to fall, and injure him so severely that he died shortly after reaching the surface.

If the labour is inexperienced, it is the duty of the management to see that it is properly supervised.

No. 20 in the list took place in one of the East Indian Railway Company's Serampur mines and resulted in the death of three persons. The seam of coal here is 22 feet thick, and the method of extracting the coal by "dropping" the upper portion of the seam, which is usually very successful, is as follows :—A pillar 40 feet square is formed by galleries driven in the bottom 6 feet of the seam. At the same time narrow channels or "chatnis" are driven in the solid coal directly above them to the full height of the seam entirely separating the pillar from the solid coal on all sides. This block is then undergone in the bottom 6 feet of the seam by cross drivages, which are widened out and systematically timbered, leaving 6 or 8 "nobs" five feet square.

When these operations are completed the timber is withdrawn, and the "nobs" blown out by explosives causing the upper portion of the seam to fall. The coal is then filled out; long props being set to the stone roof, as soon as there is room for them, to give warning of any movement.

In this particular instance the "nobs" were irregular owing to a wide gallery having been driven through previous to the formation of the pillar. A slip in the roof had been detected at F (see plan), and rows of props were set at each side for support. Unfortunately an undisclosed slip ran through the "nob" C and getting off the coal weakened the support to the roof, with the result that a large portion of the roof coal fell and buried the workers.

The official in charge had not realised that having a slip in the roof at one side and a "chatni" on the other, the effect of the slightest movement would be to push over the coal towards the "chatni" and sway out the props. This is exactly what happened.

A few strong chocks near the "chatni" and between it and the slip would have safeguarded the place.

No. 22 in the list occurred at the Banksimulla mine, belonging to the Bengal Coal Company, Limited, and was due mainly to the responsible officials failing to appreciate the danger of two joints in the roof. The deceased was working in a gallery 15 feet wide in a 16 feet seam beneath an exposed portion of the shale roof. The two joints in the roof should have been sufficient warning to any man of experience. These were perceived, but no support was erected, nor was the place fenced off.

The workman was withdrawn, but as there was apparently no reason why he should not return, he went back, and some two tons of coal and shale fell upon him and killed him.

Officials must understand that this is not taking "reasonable means" to carry out the Act, and they will accordingly be held responsible.

No. 23 on the list, which happened at the Gopalichak Coal Company's Gopalichak mine, in a 22 feet seam, is an illustration of the casual way in which coolies are admitted into a coal mine in the Jharia coal-field. As the roof of a level was becoming unsound it was being taken down each Sunday by stone cutters or repairers who were paid a daily wage. On the morning of the accident two new coal cutters, who had not previously worked in the mine were either taken or allowed by the headman of the repairing party to go into the mine. They all worked together getting down the roof coal. After a time the roof began to crack and show signs of weight, so the repairers promptly withdrew. The two coal cutters, however, who were paid by the tub of coal, thought they could fill another tub and then leave.

In the meantime the roof fell and killed one of them on the spot. Neither of these men was legitimately employed, and the officials admitted that a coolie could be taken down the mine or go down of his own accord; could get a tip from the munshi, who up to then had been ignorant of his existence, for the coal he had cut; take the tip to the cashier, get paid and go away, without any of the head officials knowing he had ever been down the mine at all. Managers of mines must remember that they are responsible for the safety of the workers.

No. 26 on the list illustrates the danger attending the withdrawal of timber, and especially of long timber near the edge of a goaf. The accident happened at the Bengal Coal Company's Sodepur mine. The deceased was withdrawing a 10 feet prop from under some roof coal at the edge of the goaf. He had sounded the roof with a long iron-shod bamboo and considered the sound satisfactory. After the prop had been loosened at the foot he knocked it with a hammer, then stepped back to listen. Almost immediately, he went forward again and gave the prop a push when the roof coal fell and caught him.

In testing the roof sound can never absolutely be depended upon; the sense of touch is much more reliable. A man should hold one bamboo against the roof, while his companion strikes it with another.

For withdrawing props "a ringer and chain" should be used, and if a prop requires only a push, then a long pole or bamboo should be employed enabling the person to stand at a safe distance.

To guide the direction of the fall of a prop, in some mines a two-pronged iron fork fixed at the end of a long bamboo is used. This is thrust into the prop before commencing to knock it out and assures it falling away from the man.

No. 37 in the list happened at the Raniganj Coal Association's North Kustore mine, Kusunda, and resulted in the death of seven men. Upon the previous shift a triangular shaped pillar was being worked out and a large area of roof coal, 7 feet in thickness, was standing upon timber; the coal also overhung the timber. The officials in charge noticed that this roof coal showed signs of weighting, so they withdrew the men and put a thin wire fence across the place. When the next shift of nineteen men in an adjoining place had been at work some time they got short of coal, so seven of them went beyond the fence, either to fill loose coal which had already fallen, or to get some easy coal from the tender pillar.

While doing so the roof coal swayed over the timber and killed them all.

The other ten afterwards ran away from the mine. A thin iron wire fence will apparently not keep out the Indian miner unless an official is about. If the roof is found to be unsafe, it should be made safe, either by increasing the support or by taking the doubtful portion down altogether.

No. 38 happened in the same seam, in another part of the same mine, and was even more disastrous than the former; seven men and one woman losing their lives—the latter being the wife of the sirdar in charge of the labour.

In this case also a pillar was being extracted next to the goaf. Eleven people were working at the face of the pillar which was 29 feet wide, getting out the bottom portion of the seam, leaving 10 feet of upper coal supported upon props.

They had undermined some 6 feet when, without any warning, the whole of the overburden forming the width of the pillar, came away, and swayed out the timber, burying eight of them.

Subsequent examination disclosed a fine weight crack in the form of a slip leaning over the pillar upon which the coal had slid.

It is obvious that vertical props beneath a weight of this character with a loose front are quite insufficient protection. Additional support in the form of long sprags well let into the floor and coal ought also to have been set: a simple remedy in such cases.

Fine weight cracks in these goaf pillars are neither suspected nor frequently carefully looked for by officials.

The steady weight which the pillars are made to carry must produce them. The experienced eye can usually detect them, and, even if they are not apparent, they must be presumed and preparations made accordingly. At this particular mine the method of extracting the pillars has since been altered.

No. 39 in the list occurred at the Mucheridih mine belonging to the Mucheridih Coal Company, Limited. A miner went into a level which was not being worked because he could get easier coal, and, after cutting a small quantity some roof coal fell and killed his daughter.

The level was used for stowing, though apparently only intermittently, and the stowing was placed along one side only.

If stowing were commenced in every case close up to the face, there would not be the same temptation to work there, and if a gallery is not being used continuously it must be fenced off.

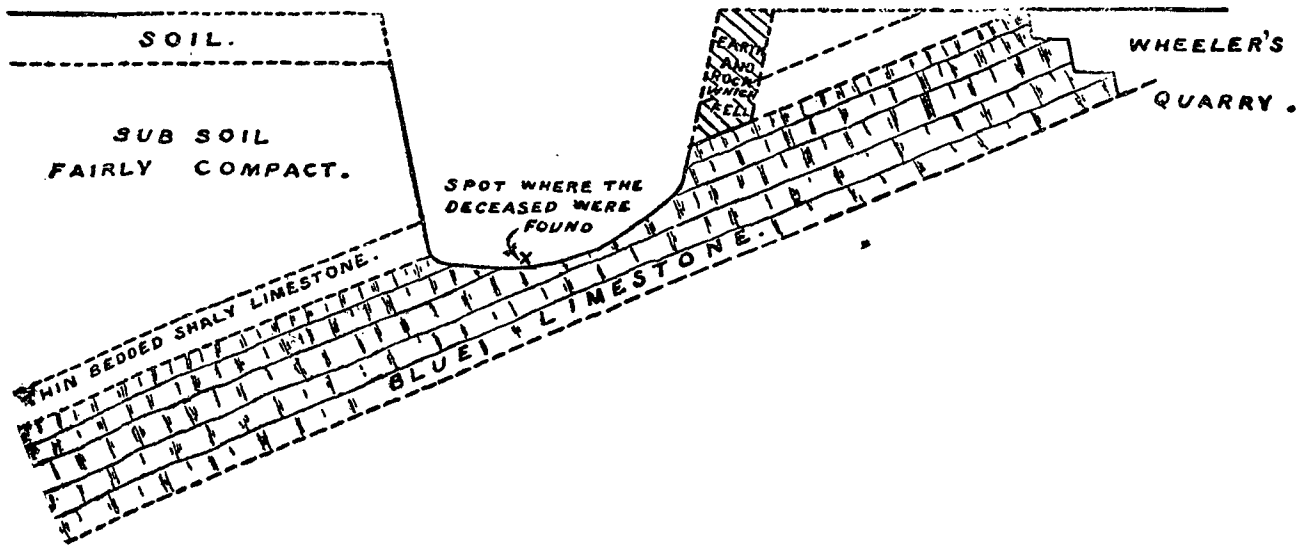
No. 40 in the list occurred at the Bengal Coal Company's Murulidih mine. A dip gallery had been holed out into a level in which two feet of roof had been previously taken down ; when this gallery was widened out to the proper width a piece of roof, forming the loose end in the level, fell and killed the deceased.

There is always a risk attending holing one gallery into another which has a loose end of roof. The first holing should always be narrow and timber set as early as possible to support the lip edge.

No. 46 in the list happened on the 10th February at Messrs. R. Dunne & Son's limestone quarry, Katni, Central Provinces. The boundary dividing two quarries runs very close to the one in which the accident happened. On the day of the accident six men were employed by Messrs. Wheeler & Company, cutting back the soil at the surface near the edge of Messrs. Dunne & Son's quarry, in which some 40 persons were at work.

Without any warning a large mass of earth and rock estimated at 120 tons, slipped upon the steeply inclined surface of the limestone bed on which the material rested and rolled into the quarry. Four of the men fell after the earth for a distance of 15 feet, but none of them were much injured. Several of the men working in the bottom of the quarry were caught by the fall, seven of them being killed and two severely injured.

The following sketch illustrates the accident :—



The fall was due to the side not being sloped back and was doubtless accelerated by the rain which fell a few days previous to the occurrence, and probably also to the effect of blasting near the place of accident.

It is difficult to understand how men of experience could allow work to proceed under what was obviously such dangerous conditions, and with such apparent disregard for the safety of the work people.

The proposed new rules for mines other than coal mines, when they come into force, will, it is to be hoped, prevent a similar disaster in future.

A prosecution was instituted in this case which is referred to under heading "Prosecutions" on page 16.

No. 51 in the list which occurred at the Indian Collieries Syndicate's Jamadoba mine, in No. 17 seam, is another of the numerous cases of pillar robbing. The deceased ought to have been working in a heading, but he left that and came back to a pillar corner to get easy coal. While doing so, which his wife admitted, about 1½ tons of coal slipped down and killed him. Only very careful supervision can overcome this evil.

No. 53 in the list happened at Babu A. C. Chatterji's Mouthdih mine, Sitarampur, in open work. A pillar of clay 10 feet high, 8 feet wide, and 15 feet to 20 feet long, rested upon coal through which at some time a narrow heading had been driven transversely. The carrying road was situated about 15 feet from this point. The husband of the deceased said that eight or nine of them were sitting down, smoking and resting in the shade of this cliff preparatory to going home, when without any warning the clay toppled over and buried his wife and injured two others.

It should have been obvious that such a "stook" of so unstable a substance as clay, apart from any considerations of fracture, might topple over at any time, and ought to have been regarded as unsafe long before the accident happened and either fenced off or removed. It had apparently existed in its original condition for some time, and everybody concerned had become blind to the danger. The manager showed grave error of judgment in exposing his workpeople to such unnecessary danger.

No. 55 in the list is another instance of pillar robbing. It happened at the Annapurna Coal Company's Birsingpur mine, Mugma, in some old fenced off workings, where the natural cleats in the coal are intersected by fractures produced by weathering, forming columns of loose coal leaning up against the sides. The deceased's brother stated that they went through a fence to search for a little loose coal as they were a few baskets short of completing their stock on account of their own place being hard. They watched the sirdar go out of the pit to get his food and then went through the fence. They had no sooner started to cut when the whole side came away and buried him.

Everyone in the mine seemed to be aware of the sirdar's practice of leaving the mine for a certain period daily.

Mines cannot be efficiently managed without discipline, and it is well known that the Indian miner must have close supervision if he is to be kept safe.

No. 61 in the list occurred at the Kusunda and Nayadi Collieries' Kusunda mine. Three new miners with three women proceeded on the night shift to a part of a district comprising four galleries and were told to work in any one of them. They had been at work about three hours when nearly 25 tons of coal fell off one of the corners and buried all the women. The men said that a slight weighting warned them and gave them time to skip out of the way, otherwise they would have been caught also. The road at this point was 17 feet 6 inches wide by 15 feet 6 inches high. Such roads are a standing menace to the safety of persons passing or working in them and should always be regarded as potentially dangerous places. The roof in a road acts like a lever on the edges of the pillars, and as the road widens more power is given to it until a point is reached when the coal can no longer withstand the pressure and it crushes down.

Excessively wide galleries are generally the result of robbing favoured by inadequate supervision.

Detection of the culprits is often a difficult matter, but much can be done by systematically whitewashing all galleries as soon as they reach a certain width. This acts as a powerful deterrent to evilly disposed miners.

Inexperienced miners, such as these were, ought not to be allowed to work on the night shift when the supervision is invariably in the hands of subordinate officials. Whenever possible, it should be contrived to work them in with experienced men, or at least to work near them; and in any case, it is injudicious to give a gang of men the option of working in more than one place. The practice leads to all sorts of abuses. No person should be allowed to work in any place that has not been pointed out to him by a responsible official.

SHAFT ACCIDENTS.

No. 67 in the list happened at the Kendwadih mine belonging to the East Indian Coal Company, Limited. The deceased was employed about the pit top. He had been asleep; and wishing to go to the other side of the shaft, probably opened one of the folding gates intending to walk across the cage. The night was very dark, and it is likely that in a drowsy state he opened the wrong gate and fell down the shaft. Automatic gates were being made for this pit, and were nearly ready when the accident occurred.

No. 68 in the list happened at a sinking pit at the Standard Coal Company's Jharia Khas mine, Jharia. The front of the moveable trolley over the pit top is usually a fixture to prevent anybody or anything falling down the shaft. In this case it was a moveable fence rail to allow dirt to be taken off at either side of the shaft. When the trolley was moved backwards off the shaft, deceased fell forward to the bottom of the pit. There can be little doubt that the fence rail had not been put down.

No. 71 in the list is another illustration of risk attending temporary arrangements: it happened at the Lutchipur Coal Company's Lutchipur mine, Sitarampur. The widow of the deceased stated that when she and her husband arrived on the pit bank at night the three banksmen were asleep. Her husband woke one of them, and the latter went to wake the engineman. Soon after this the husband called to his wife to come, but she was then walking away to get a basket. When she returned her husband had disappeared.

Immoveable fences are fixed on three sides of the shaft, and on the fourth side a moveable drop bar at a height of three feet from the flat sheets is fixed opposite each cage.

It is admitted that men have got into the cages by bending beneath the bar instead of waiting until it was raised.

Although it was a moonlight night and two fires were burning no one saw the occurrence. The only explanation of the man's disappearance is that he crept beneath the bar where there was no cage and fell to the bottom of the shaft.

One bar 3 feet high is a very inefficient form of fence; there should have been at least two bars.

Permanent gates were afterwards fixed at this shaft.

No. 78 in the list occurred at the East Kuordih mine belonging to the East Kuordih Coal Company, Limited, and is a sample of engineering work which I hope will never be repeated in India.

A single winding pulley not in use was fixed to two beams across the top of the head frame. The beams were not bolted down. A scaffold was being lowered down the shaft by means of a rope over a snatch block.

The snatch block was suspended by a chain from another beam bolted to the head frame. As this position dragged the scaffold too much to one side of the shaft an attempt was made to draw over the snatch block into a more central position. With this view the ends of one of the pulley beams were lashed with rope to the frame, and the ends of the same rope were used to draw over the snatch block towards the centre of the shaft.

It can easily be understood that the weight of the scaffold upon the snatch block pulled away the unbolted beam which supported the pulley and allowed the latter to fall into the shaft.

The scaffold was demolished, and a man lost his life and two others were seriously injured.

The deceased was apparently the man who had lashed the beam, according to instructions, but no one would admit telling him also to fasten the ends of the rope to the chain supporting the snatch block.

The accident was due to gross incompetency.

No. 80 which happened at the Lutchipur Coal Company's Lutchipur mine, Sitarampur, is an instance of thoughtlessness causing the death of a man. While three men were in the bottom of a newly sunk shaft a bolt fell from the head gear and caught one of them causing a compound fracture of the leg. The man apparently refused to go to a hospital, and with the attention he received at his home gangrene set in and he ultimately died.

When the head gear was examined several bolts were found simply inserted into the holes without any nuts upon them; naturally the vibration caused the bolt to come out.

No. 82 occurred at a side entrance from No. 3 shaft in the Hatnol seam, Dishargarh mine, belonging to the Equitable Coal Company, Limited. A platform projects from the side of the shaft to within 12 inches of the cages. As the arrangements were only temporary, the manager had not considered it necessary to fence off the shaft. Water bailers only were in this seam at the time. After the men had been at work about two hours the deceased left his companions and said he was going to the surface. He proceeded with his safety lamp to the shaft and signalled to the bottom for the cage; this was sent up, and nothing was heard for about an hour when the the man fell 106 feet to the shaft bottom and was killed.

He may have lost his light and become confused and stepped into the shaft instead of the cage, or, he may have slipped between the platform and the cage.

No onsetter was employed at this landing. The deceased was quite inexperienced and ought not to have been allowed to give signals.

This side entrance ought undoubtedly to have been fenced; the interpretation of the word "temporary" must be taken literally.

BY EXPLOSIVES.

No. 84 in the list happened at the East Indian Railway Company's Bitagarha mine, Kurhurbari Colliery. A band of stone 18 inches thick in the seam rendered blasting necessary. A few weeks prior to the accident several dynamite shots had been fired in a roadway, and there was a doubt at the time as to whether or not one or more had missed fire.

The deceased and another were dressing back the sides of the roadway. After loosening a slab of stone by means of a wedge, a few blows with a hammer were given to break the stone, when an explosion occurred; flying pieces of stones injured a man so severely that he died shortly afterwards; the other man was incapacitated for only a few days.

The place was visited two days afterwards by Mr. Simpson, and there was no sign of any shot hole or even a recent explosion. The cause of the accident can only be surmised. It is possible that one of the exploded shots had cut the fuse of another charge and displaced the stone which the latter was expected to blow up, leaving the second charge embedded in the remaining socket of its drill hole; or, that one of the charges had been incompletely detonated and a portion of the dynamite had been left at the bottom of the hole.

No. 89, which happened at the bottom of a sinking shaft at the Saltore Coal Company's Saltore mine, is an unusual occurrence and fortunately not likely often to repeat itself. Fourteen shot holes were charged on the day preceding the accident and fired electrically, all of them apparently going off. After the débris had been removed it was found that some side, that ought to have been broken, remained intact. Another hole was put into it, and while this was being drilled an explosion occurred. There were eight people in the shaft bottom all more or less injured, and two of them died shortly afterwards. The explosion was undoubtedly the result of a miss-shot on the previous day.

After the explosion it was found that the piece of rock had been shattered and the vertical halves of the two shot holes exposed. They were exactly $4\frac{1}{2}$ inches apart and parallel to each other. At a height of $10\frac{1}{2}$ inches from the bottom of them there as was a fracture in the rock that ran across at right angles to them; this may have been caused by the explosion, or it may have been the result of two holes being drilled close together and formed during the drilling of the last hole. According to the charge put into the hole the detonator would be opposite to this crack, and if the fracture was caused

during the process of drilling the second hole, at the moment when the rock snapped it exerted a pressure upon the detonator sufficient to explode it.

I have known detonators to be fired somewhat after this manner, on more than one occasion.

HAULAGE ACCIDENTS.

Accidents under this head would practically have been *nil* had precautions been taken to prevent persons being in the haulage roads while the sets were in motion. Temporary fences erected across all openings into the haulage roads at such times, and means of signalling from the top to the bottom of inclines, warning the onsetter below of the approach of descending tubs would go a long way to remedy a matter that is rapidly becoming a reproach to colliery managers.

No 98 in the list which happened at the Bhalgora Coal Company's No. 3 Incline, Bhalgora mine, is an illustration of the loose way in which people at some mines in Bengal go into the mines.

Deceased's mining experience extended to a month only, during which time he had worked in another mine of the same colliery.

According to the evidence of his daughter who was with him at the time of the accident, they were short of tubs at the other mine, and the miners who were living with him told him he would get plenty of tubs if he worked at No. 3 Incline. Accordingly, without saying a word to anybody, he proceeded to No. 3 Incline and walked down it; apparently intending when he got down, to enquire who could put him to work and where. Before they had got very far a train of empty tubs came down and luckily missed the girl, but caught the man and injured him so severely that he died soon after reaching the surface.

This Incline was used for haulage only, another being provided for travelling. No one admits having seen the deceased and his daughter enter the incline. A relative helped to bring him out.

No. 102 in the list which happened at Mr. C. J. Smith's Bagdiggi Colliery, Jharia, was due largely to carelessness on the part of the gateman at the top of the incline. As is usual in such cases the man absconded.

After a full train landed at the top of the incline the last tub became detached, or got away while being uncoupled and ran 400 feet down the incline, killing two women. A pair of uprights with a bar across is fixed at the end of the brow in order to catch runaway tubs. The gateman had apparently failed to fix this properly. Runaway points are also arranged below the gate; it is possible that the tub jumped over them.

No. 106 in the list which occurred at the Aldih Coal Company's No. 1 Incline, Bhutgoria mine, throws light on a common danger. Three empty tubs stood on the brow of the incline ready to descend. The hookman secured the back one to the rope, but forgot to couple the others to it, so that when the block was opened and the set started the latter ran amain down the incline and killed a man below.

The provision of a second stop-block, runaway switch or kick-up some little distance below the brow would probably have averted the accident. At certain collieries this simple precaution is the subject of a special rule, and the manager is enjoined to "see that additional blocks or runaway switches are fixed below the first block at a greater distance than the length of a train of tubs."

No. 110 in the list exemplifies the necessity for designing drawbars of tubs for use on heavy grades of suitable strength. Six tubs were being raised in an incline, on a grade of 1 in 3, and when near the top a drawbar broke at a rivet hole and four tubs rushed back into the mine and caught the deceased. The drawbar was made of inferior iron 3 inches by $\frac{1}{2}$ inch cross section, and an examination showed that it had become crystalline and brittle. Even with the best Lowmoor this section would give too low a factor of safety. It cannot be too often borne in mind that drawbars designed for flat grades become a danger when used on heavy ones.

There have been several accidents due to faulty construction of pit tubs. Iron tubs which have no drawbars and the frames of which are made

to bear the whole strain of haulage are in common use. An attachment rivetted on to the end of a tub is much too weak for most of the gradients in Bengal mines. All tubs should be provided with drawbars, and also with an effective coupling which will not become loose in ordinary work.

The regular examination of these couplings and the rejection of those which have become worn or strained, does not receive the attention necessary : this is a question that managers have entirely in their own hands.

SURFACE ACCIDENTS.

No. 124 in the list happened at the East Indian Railway Company's Serampur No. 2 mine, Giridih. This shaft was used only for pumping. Four men were lowered in a bucket to go to the pumps, and some time later one of them wished to ascend. During this interval the winding engineman had gone away, and another who had been taking his food, had taken his place.

It was a dark, windy and rainy night : during the winding a lad stood near the edge of the pit with a lighted lamp, but just as the bucket appeared his light was blown out. The engineman may have become confused as he would still see only one lamp ; however, he dragged the bucket up to the winding pulley until the rope came off it, and they fell to the ground level : the man was injured so seriously that he died in a few hours. The whole place was apparently very imperfectly lighted, for which the assistant enginewright was to blame.

No. 128 in the list occurred at No. 3 Bejdih mine belonging to Messrs. Macneill & Company. This was a sinking pit, and in the place of the usual head gear, shearlegs made of two 4-inch wrought iron pipes 32 feet long were used, being guyed by ropes fastened to sleepers sunk 3 feet into the ground. These sleepers were 10 feet long and ought to have had the 3 feet out of the ground instead of in. The ground was probably very soft owing to the rains, and it is not very strange that the guys gave way. Unfortunately the legs fell over and crushed a woman to death.

The whole arrangement was flimsy in the extreme and not creditable to the management.

ACCIDENTS NOT INCLUDED IN THE STATISTICS.

No. 3 in the list occurred at the Bhulanbarari Coal Company's Bhulanbarari mine. A mass of overburden had been removed from a seam of coal leaving a cliff of soil 26 feet high and almost vertical : while a child was playing on the newly bared coal below, the side slipped and buried it. The place had been inspected by responsible officials during the shift, but they had failed to detect anything wrong. In such cases ordinary prudence suggests that the side should be stepped back or otherwise put on a safe slope before workpeople, much less children, are allowed to go below. I had hoped that the last of such accidents had been recorded.

No. 24 in the list is a case where a baby lost its life underground.

The mother had placed it on a ledge 3 feet high while she loaded her tub. Suddenly a fall of roof took place in a gallery about 20 feet away, and the blast blew the child off the ledge and killed it. Taking children and particularly babies into mines cannot always be avoided, but it should never be encouraged. It is not a matter of surprise that the roof fell as the gallery was 18 feet wide and unsupported by timber. Discipline cannot be strict where such irregular working is permitted.

Section IV.—Prosecutions and Additions to the Act.

(*a*) ADDITIONS TO THE ACT.

No additions of any importance were made during the year under review. Only two notifications were issued, one amending the provisos attached to rules Nos. 32 and 33 (applicable to coal mines), and the other codifying the various

existing rules framed under the Act, with the exception of Rules Nos. 1-57. The notifications are shown in Appendix IV.

(*b*) PROSECUTIONS.

Only one prosecution was instituted during the year. It was a case where a manager of a limestone quarry in the Central Provinces was prosecuted in connection with an accident which occurred by the falling in of a side of his quarry, resulting in the death of seven men and the injuring of two others.

As it was considered that there had been no breach of the Indian Mines Act, but that the manager had shown great recklessness and disregard for the lives of his workpeople in not having sufficiently sloped back the particular side which fell, although having been previously warned about it, it was decided to proceed against him under Section 304(*a*) of the Indian Penal Code. The case was tried before the Extra Assistant Commissioner before whom the accused stated that he had carried out the instructions given him, and that the accident was the result of blasting operations carried on at a neighbouring quarry and the rains which had fallen a few days previous to the blasting. The case was dismissed, as the Magistrate held that the charge brought against the accused was not proved.

Section V.—General Remarks.

HEALTH AND SANITATION.

The coal areas of Bengal, particularly the Jharia coal-field, are peculiarly liable to outbreaks of infectious diseases. Smallpox, plague and cholera claim a large annual toll from the inhabitants of these districts, and the little that has been done in previous years has apparently been unable to stem the recurrent onslaughts of these foes in epidemic form.

"Cholera," as was mentioned in this report two years ago, "is a waterborne disease, and until a proper scheme for the supply of pure water is in operation its dark shadow will lie across the district." Hitherto tanks and wells have been the only sources of water supply, and when a stagnant tank is used indifferently for washing cattle, human beings and clothes, it is not surprising that it becomes contaminated. Fortunately this is thoroughly appreciated by all the leading colliery managers, and many of them lack only the power and the funds placed at their disposal to instal an efficient water supply to the colliery villages under their charge.

In a few instances this has already been done. Conspicuous amongst the number who have arisen to the occasion are Messrs. Kilburn and Company, who have already erected four Jewel filters at Jamadoba Colliery.

These filters are giving very satisfactory results. The water pumped from the mine is passed through the filters, and after being led along a 3-inch main is distributed by 2-inch pipes all over the colliery and around the miner's "dhowrahs"; at the latter, taps and stand-pipes are erected which receive their pressure from overhead tanks, so that the miner has always a constant supply of good water at his door. Proper drains are constructed to carry away the waste water from the taps. Owing to the developments at the colliery three large gravity filters, 10 feet in diameter, are to be erected, and the supply of water will come from the Damuda river. Already $1\frac{1}{2}$ miles of 5-inch pipes have been laid towards the river: when the scheme is complete there will be a supply of filtered water for over 2,000 people.

The same firm are showing a praiseworthy example in the way of sanitation. The new miners' dwellings are substantially built in lines far enough apart to ensure thorough ventilation; orders have been issued for these huts to be kept thoroughly cleaned and regularly whitewashed and disinfected, and it is intended to supply proper sanitary enclosed refuse bins and a cart to empty them daily.

The Jewel filter is in use at several mines, with great benefit to the miners. Colonel Clarkson, I.M.S., Sanitary Commissioner, Bengal, agrees with me that this or a similar type of filter properly worked, could meet all the requirements of a germ-free water supply.

The large proprietors may arrange installations and meet the greater part of the difficulty of water supply, but the small owners and particularly the Indian proprietors hesitate to do anything, and thus the risk remains of infecting a whole area. Even were the contagion kept within the bounds of its outbreak, the labour at adjoining mines takes fright; so that a properly equipped mine may suffer for the sanitary shortcomings of its neighbour.

It would appear therefore that only a complete district scheme of water supply and control of sanitation would meet the needs of areas like the Jharia coal-field. On every hand I believe colliery managers would welcome an authority with power to compel something like uniform efficiency in this respect.

If the law does not allow local authorities to insist upon adequate provision being made in this matter, then I would suggest that Government should amend the Mines Act to the extent of including in the word "mine" the adjacent "dhowrahs" and villages depending upon the mine.

The necessity for urgent measures was vividly brought home to the mining community last year when from the middle of March for about two months cholera was rampant in the coal-fields. At the collieries alone nearly 5,000 deaths occurred, and in the adjoining villages, from which it is impossible to obtain any reliable statistics, the loss of life was probably much more. Work was stopped at mines because the labour fled. About the middle of May while inspecting one mine I found only 250 people employed; a few weeks before the number at work was 2,000. This state of things was reflected all over the Jharia coal-field, and the gruesome sights that were witnessed are not likely soon to be forgotten. I took the opportunity of visiting some of the mines with Dr. Haffkine and along with the miners was inoculated for cholera. Many of the officials availed themselves of this safeguard and were loud in their praises of Dr. Haffkine's work and the confidence it gave to the workers generally.

At the Dandot coal mines in the north-west of the Panjab owned by the North Western Railway a plague prevention committee looks after the well-being of the village. Last year by means of trapping nearly a thousand rats were caught and destroyed, which practically cleared the village. As a whole the villagers keep their own places clean, but a sweeper is employed, when necessary, to gather up any filth that may have been thrown out.

AMBULANCE WORK.

It is to be regretted that ambulance work is not given the prominence at Indian mines that its value merits. I am quite satisfied that a knowledge of "first aid" by mine officials would prevent many serious accidents terminating fatally. India in this respect lags very much behind other coal-producing countries. The subject, however, has obtained a footing at some of the leading mines.

The European staff of the East Indian Railway Company's collieries was trained in 1906 by Dr. Bathe, the Senior Medical Officer of the East Indian Railway Company, and a course of lectures given in ambulance work. The result was that fourteen officials received certificates from the St. John's Ambulance Association.

In addition to this all the deputy overmen and sirdars are drilled weekly in the practice of fixing splints, tying bandages and stopping bleeding. Their skill, I believe, is remarkable.

A similar drill is given every Sunday to the subordinate staff of the Khost collieries in Baluchistan, belonging to the North Western Railway, and I observe with satisfaction that one of the Bengal collieries is seriously taking the matter up and training its official staff.

The Bengal Coal Company approved of a scheme of instruction in the principles of "first aid," and I was hoping to hear of its successful working; for some reason, however, it has never been put into operation.

MINING EDUCATION IN INDIA.

Satisfactory progress under the above heading has to be recorded for the year under review.

I learn from Mr. E. H. Roberton, the Professor of Mining Engineering at Sibpur College, that five students were successful in gaining their diplomas in the principles of mining at the examination held in April 1908, and obtained excellent appointments in the coal-fields. The other mining students who left the college at the same time without gaining the diploma, also secured good appointments.

There were eighteen students attending the mining courses at the college during the session 1908-09. Of these fourteen were studying the first year course, and three the second year, while one was an external student. From these students a certain number have been weeded out by the system of monthly examinations, and others have left the college, leaving seven to sit for examination in course one and two for the diploma examination.

The camp of mine surveying and practical mining was pitched at Jharia, during January and February 1909. Surveys were made in the mines of the Lodna and Standard Coal Companies and visits of inspection made to the numerous mines in the vicinity.

The practical mining laboratory is now in working order, as such machines as have arrived up to date are running. Other machines are on the way, and will be installed as soon as they arrive. A coal washing machine and a briquette press are being ordered this year.

Mr. W. T. Griffiths, the Mining Instructor, Bengal, who delivers lectures on mining at different centres in the coal-fields, also reports very hopefully. He says: "The progress made in mining education in the coal-fields of Bengal continues to be satisfactory, and greater appreciation of the facilities afforded by Government is apparent in the attendances recorded.

"At the four centres, two of which are in the Raniganj and two in the Jharia coal-fields, 417 students were enrolled up to the end of the year, and the average attendance at each lecture was 80.

"Of the 74 persons who have been granted certificates of competency under the Indian Mines Act 60 have attended the course of instruction.

"Owing to the recent completion of the erection of four lecture rooms better accommodation is now provided, and an improvement in results can be anticipated."

Information relating to the course of study at the Civil Engineering College, Sibpur, and to the lectures delivered at the coal-fields will be found in Appendix III, Table No. 4.

MINING AND GEOLOGICAL INSTITUTE OF INDIA.

The Mining and Geological Institute of India has again shown very satisfactory progress both in the number of its members and in the interest taken in its meetings. It now has 267 members of all grades—an increase of 42 over the previous year. Meetings were held in Calcutta, Sodepur, Jharia and Dishargarh for the reading of papers and inspection of collieries. Of the seven papers read, one dealt with mica, one with long wall working, two with mine dams, one with coal dust, and one with central electric stations for collieries.

The excursion meetings in connection with the institute are of considerable educational value, as they enable members to see what others are doing and to take advantage of their neighbour's experience. All such meetings were well attended. Mr. H. G. Graves, who has been such a capable secretary, was unanimously elected to the presidential chair for the year 1909, and the institute was fortunate in securing as his successor Mr. H. H. Hayden, Superintendent of the Geological Survey of India.

If Mr. Hayden can imbue the members with some of his own energy and spirit, the institute is certain to flourish.

BOARD OF EXAMINERS.

During the year 1908 there was one change on the Board, that was when Mr. Grundy, who had been officiating, was succeeded by myself as Chief

Inspector of Mines in India, and I thus became *ex-officio* President of the Board.

The Board held nine meetings, Mr. Grundy being President of the first and myself of the remainder.

There were 61 new applicants for service certificates, of whom 25 were successful.

Fifty-three applicants holding first and second class British certificates of competency were furnished with similar Indian certificates.

An examination was held on the 5th, 6th and 7th August for certificates of competency at which 82 candidates appeared, but only fifteen were successful in obtaining the requisite number of marks qualifying for certificates. The results were disappointing, but I have great hopes that the lectures being delivered in the coal-fields by Mr. Griffiths will greatly improve this state of affairs The examiners were Messrs. Geo. Miller and G. C. Lathbury (non-official members) and G. F. Adams (official member) who acted as secretary.

MINING BOARD OF BENGAL.

Three meetings of the Mining Board were held during the year. At these meetings the Board approved of the following :—(*a*) Rules Nos. 1 to 24 applicable to mica and limestone mines, and (*b*) draft notification consolidating together the existing notifications publishing the rules under the Indian Mines Act of 1901.

The question of drawing up rules under the Act for the provision of suitable water for drinking purposes at works above ground and the bearing of the Mines Act upon the general questions of sanitation, conservancy and water supply at mines were also considered.

LAND ACQUISITION (MINES) ACT, 1885.

I would remind colliery owners that when they give notice to the Government of Bengal in the Judicial Department under Section IV of the above-named Act of their intention to work coal they are always required to furnish certain particulars. It will save time and lessen correspondence if the particulars accompany the notice ; they are as follows :—

(*a*) the name, residence and profession of the person giving the notice ;
(*b*) the name of the mine together with that of the village and district in which the mine is situate ;
(*c*) the name of the railway line or of the siding and the main line to which the siding is attached, under which the mine is situate ;
(*d*) the names of the railway stations and the mileage between which the said siding or the said portion of the railway land, under which the mine is situate, falls ;
(*e*) the number and date of the declaration under which the land was acquired ;
(*f*) a tracing showing the boundaries of and the area over which the acquired land extends.

OFFICIAL DUTIES.

Mr. J. Grundy, the Inspector in charge of No. 2 Circle, retired from the service and returned to England. He came to India at the end of 1893 and was the first Inspector of Mines under the Government of India. He was a hardworking official of considerable practical experience and his knowledge was always at the service of the mining community.

His place was filled by the appointment of Mr. G. C. Leach, who in addition to having a good theoretical and practical training in England had the advantage of a knowledge of Indian Mining, having been for about six years in the service of the East Indian Railway Company at their Giridih collieries. He has proved himself a very capable officer. All the Inspectors have devoted the

whole of their time to their duties, and their work has often been arduous and exacting. Their relations with all engaged in mining have been of the happiest description.

The work increases with the expansion of the industry; advice is sought upon points connected with every side of mining; and Land Acquisition (Mines) Act cases become increasingly numerous and important and absorb a large share of the Inspectors' time.

There has been no change in the arrangements of the districts allotted to each officer; a list of the circles will be found in Appendix III, Table No. 9.

I have the honour to be,

SIR,

Your most obedient servant,

J. R. R. WILSON,

Chief Inspector of Mines in India.

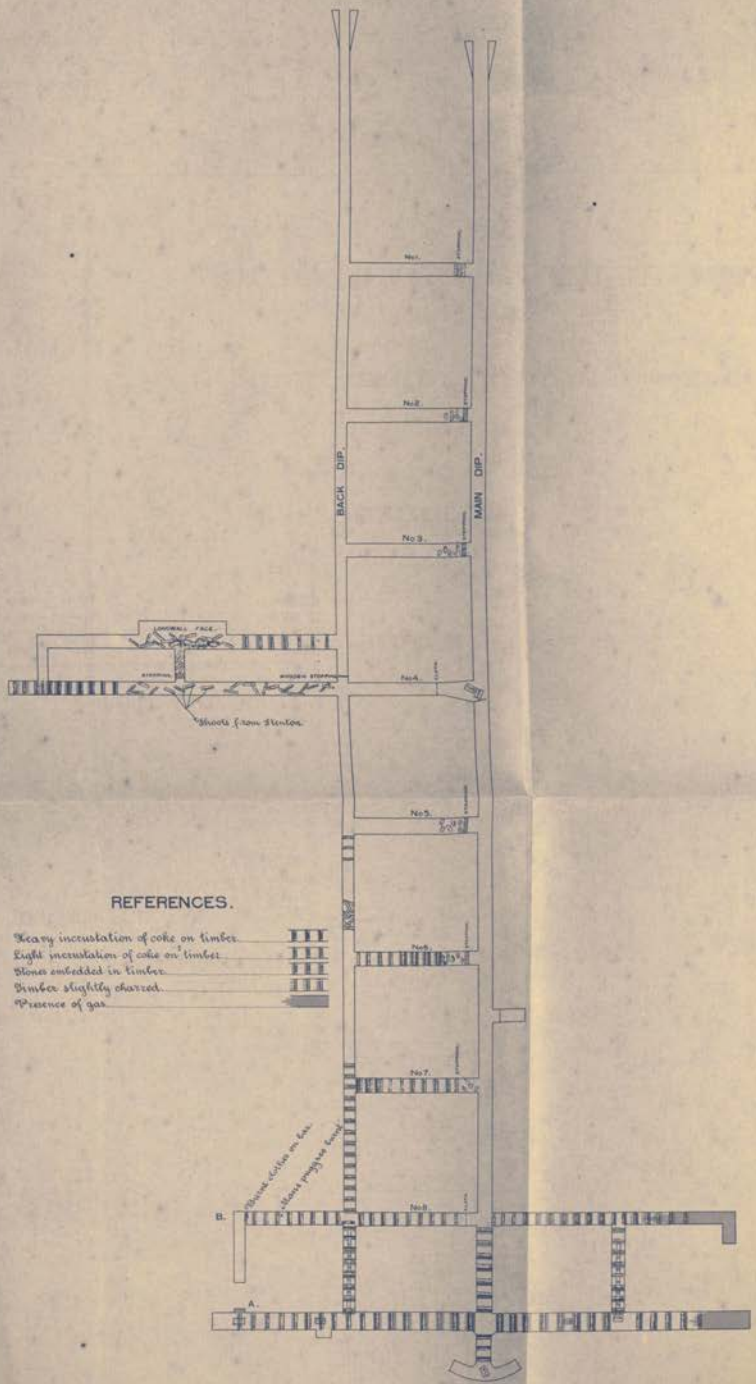
NORTH WESTERN RAILWAY,

KHOST COLLIERIES

NADIR KHAN MINE

(BALUCHISTAN).

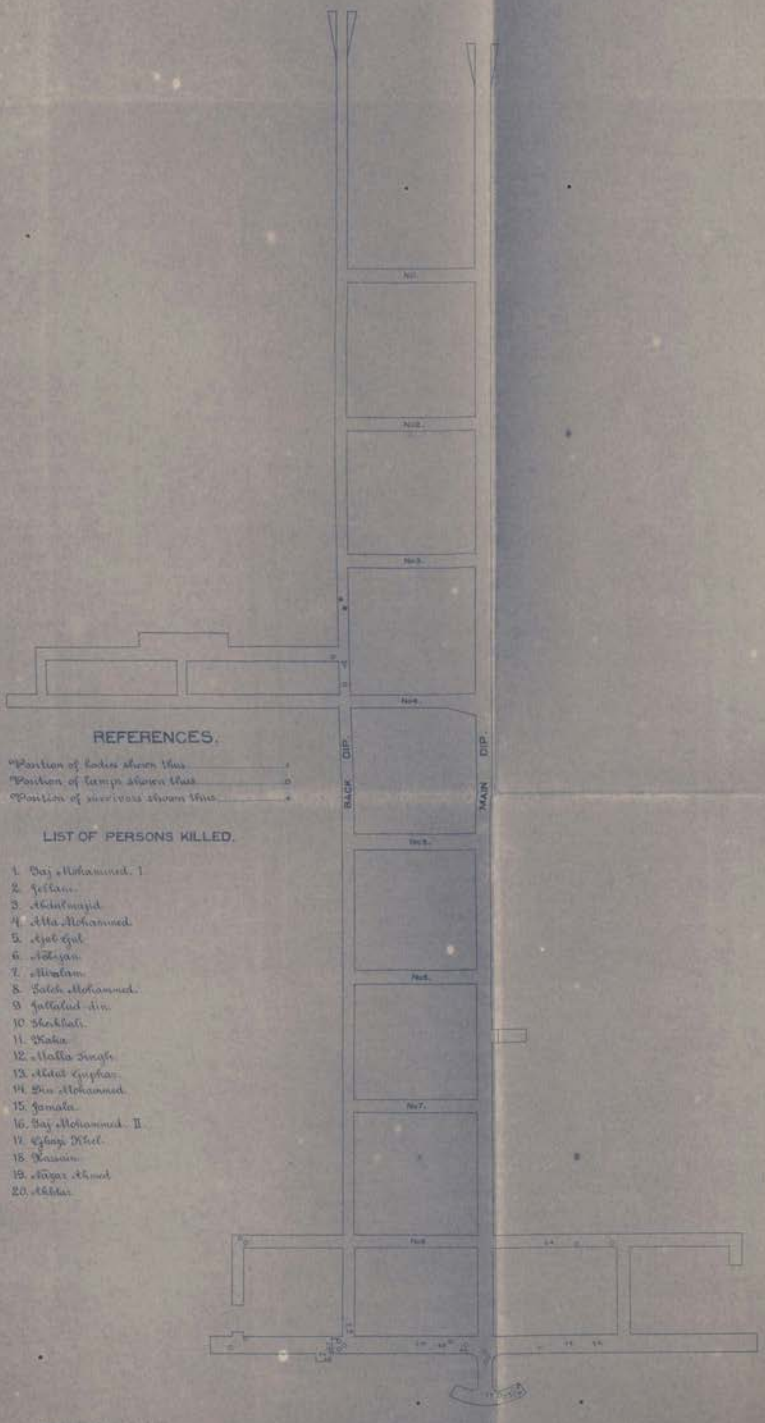
Scale 1 Inch = 40 feet. Plotted on slope.



Reg. No. 1513 E., 19—12—1,000.

NORTH WESTERN RAILWAY
KHOST COLLIERIES.
NADIR KHAN MINE.
(BALUCHISTAN)

Scale 1 Inch = 40 feet. Printed on slope.



REFERENCES.

Position of bodies shown thus ——— •
Position of lamps shown thus ——— o
Position of survivors shown thus ——— •

LIST OF PERSONS KILLED.

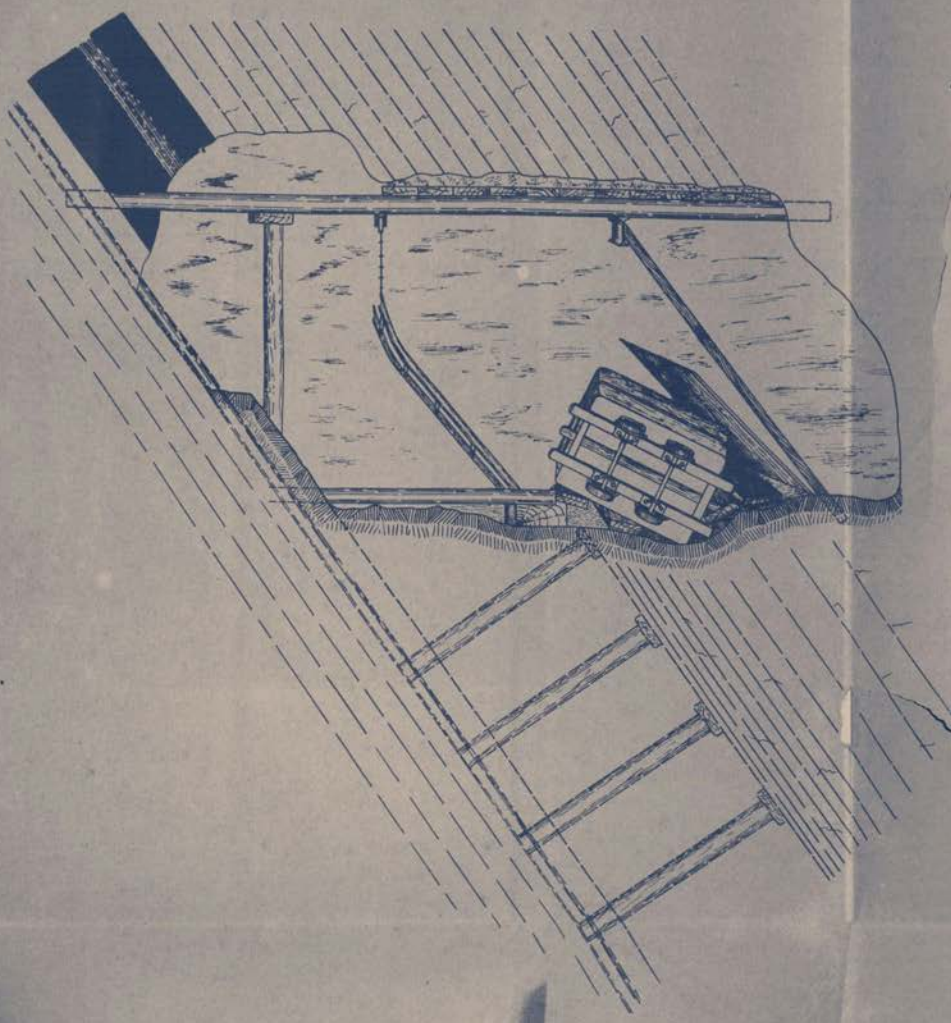
1. Taj Mohammed. I.
2. Jellam.
3. Abdulmajid.
4. Atta Mohammed.
5. Ajab Gul.
6. Nabijan.
7. Miralam.
8. Saleh Mohammed.
9. Jallalud din.
10. Sherkhali.
11. Kaka.
12. Malla Singh.
13. Abdul Gupha.
14. Din Mohammed.
15. Jamala.
16. Taj Mohammed. II.
17. Ghazi Khel.
18. Hassain.
19. Nazar Ahmed.
20. Akhtar.

NORTH WESTERN RAILWAY.
KHOST COLLIERIES.
NADIR KHAN MINE.

Shewing condition of No. 4 Kamani Junction with main dip after the explosion.

Scale 1 Inch = 3 feet.

Inches 12 9 6 3 0 1 2 3 4 5 6 7 8 9 10 Feet.

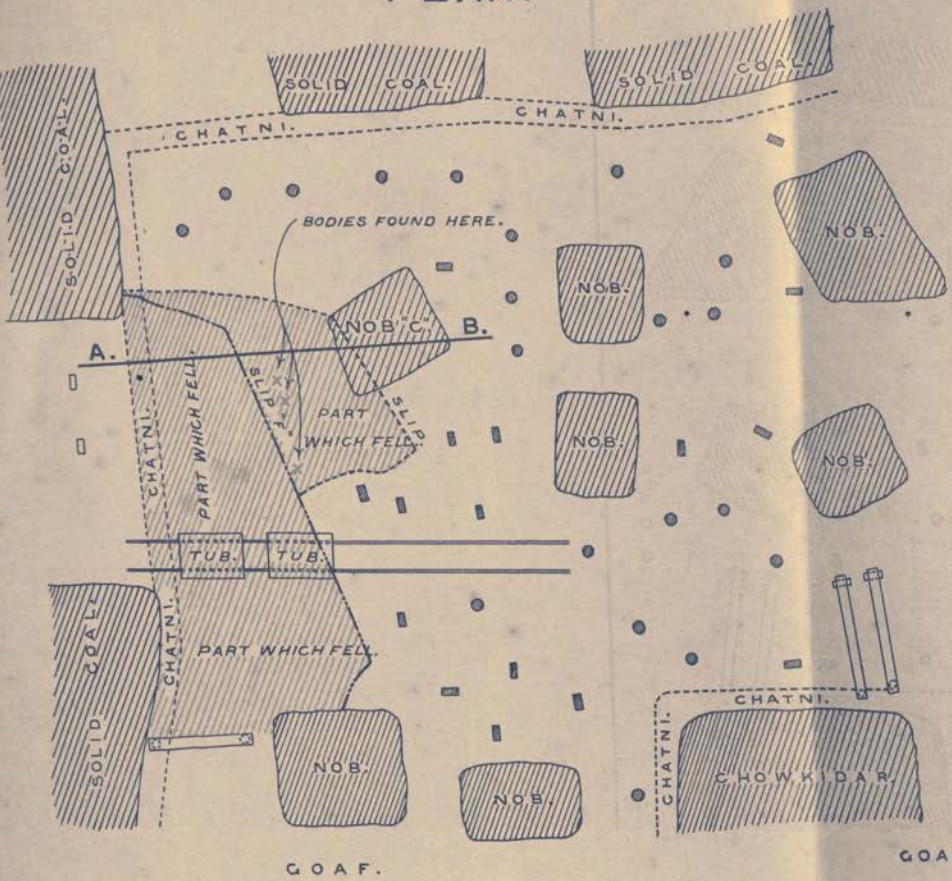


E. I. R. COLLIERIES, GIRIDIH.

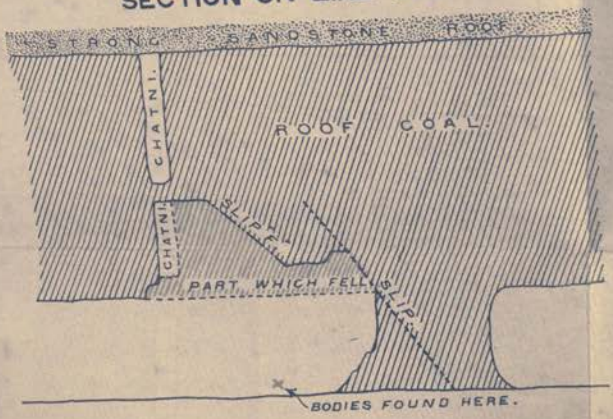
PLAN AND SECTION OF THE PLACE WHERE THREE PERSONS WERE KILLED BY A FALL OF ROOF COAL AT 16A MINE ON 9TH APRIL 1908.

SCALE 1 INCH = 8 FEET.

PLAN.



SECTION ON LINE A.B.



Reg. No. 1209 E., 09.—V.—1,500.

APPENDIX I.

Fatal Accidents, 1908.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			EXPLOSION OF FIRE-DAMP.—(*22 deaths*).			
1	16th June, 10-30 A.M.	Nadir Khan Mine, Khost Colliery, Khost P. O., Sibi, Baluchistan.	North-Western Railway.	Taj Mahomed, (*m.*), 45, *Jemadar.* Jellani, (*m.*), 30, Abdul Majid, (*m.*), 25, Atta Mahomed, (*m.*), 30, Ajab Gul, (*m.*), 30, Nobijan, (*m.*), 35, Sheik Ali, (*m.*), 35, Kaka, (*m.*), 26, Jamala, (*m.*), 20, Taj Mahomed, (*m.*), 30, Ghazi Khel, (*m.*), 22, Hassain, (*m.*), 25, Nazar Ahmed, (*m.*), 30, *Miners.* Mir Alam, (*m.*), 30, Saleh Mahomed, (*m.*), 30, Jalal-ud-din, (*m.*), 25, *Trammers.* Malla Singh, (*m.*), 29, Akhtar, (*m.*), 30, *Carpenters.* Abdul Guphar, (*m.*), 27, Din Mahomed, (*m.*), 30, *Carpenters' coolies.*	Coal .	Twenty-two men were at work when an explosion occurred killing all but two of them. The latter although scorched were able to escape from the mine. *See Report, page 4.* Inspection and inquiry made.
2	12th September, 7 A.M.	Chanch Mine, Barakar P. O., Manbhum, Bengal.	Bengal Coal Co., Ld.	Mangul Majhi, (*m.*), 24, *Coal-cutter.*	Coal .	The deceased was cutting roof coal when his safety lamp ignited an accumulation of fire-damp. He was burnt so severely that he died from the effects two days later. *See Report, page 7.* Inspection and inquiry made.
3	25th September, 6 A.M.	Dishargarh Mine, Dishargarh P. O., Burdwan, Bengal.	Equitable Coal Co., Ld.	Laku Bauri, (*m.*), 26, *Miner.*	Coal .	He was severely burnt by the ignition of gas in a gallery. Choleric diarrhœa supervened and he died on the 28th September. Inspection and inquiry made.
			FALLS OF ROOF AND SIDES.—(*88 deaths*).			
			(*a*) **Falls of roof**—(*57 deaths*).			
4	10th January, 10 P.M.	Budruchak Mine, Sijua P. O., Manbhum, Bengal.	Budruchak Coal Mining Co., Ld.	Lotan Bhuia, (*m.*), 28, Musan Bhuia (*m.*), 25, *Miners.*	Coal .	The deceased were widening a gallery when the roof collapsed and killed them instantaneously. The fall was 41′×7′ 3″×1′ 9″. *See Report, page 8.* Inspection and inquiry made.

APPENDIX I—*contd.*

Fatal Accidents, 1908—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*contd.*			
			(*a*) **Falls of roof**—*contd.*			
5	11th January, 12-30 A.M.	No. 3 Mine, Khost Colliery, Khost P. O., Sibi, Baluchistan.	North-Western Railway.	Jhanda, (*m.*), 25, *Shift chargeman.*	Coal	While he was sitting, a piece of stone 8′ × 14″ × 15″ fell from the roof on a long wall face, knocked out two face props, and pinned the deceased against a prop, killing him instantly. Inspection and inquiry made.
6	14th January, 9-30 A.M.	Upper Ledo Mine, Margherita P. O., Lakhimpur, Eastern Bengal and Assam.	Assam Railways and Trading Co., Ld.	Kuldip, (*m.*), 25, *Basket filler.* Subron, (*f.*), 20, *Tub-filler.*	Coal	Killed by a fall of about 30 tub loads of coal.
7	15th January, 8-30 A.M.	Dandot Mine, Dandot P. O., Jhelum, Panjab.	Government of India.	Railu, (*m.*), 25, *Miner.*	Coal	The deceased was cutting coal when a fall of roof occurred suffocating him to death.
8	20th January, 1 A.M.	No. 3 Mine, Khost Colliery, Khost P. O., Sibi, Baluchistan.	North-Western Railway.	Azam, (*m.*), 35, *Miner.*	Coal	A piece of shale 6′ × 9″ × 12″ fell from the roof of a long wall face on the deceased, who was lying immediately below, and so severely injured him internally that he died two hours later. Inspection and inquiry made.
9	22nd January, 11-30 A.M.	New Tetturia Mine, Katrasgarh P. O., Manbhum, Bengal.	New Tetturia Coal Co., Ld.	Mundri Deswariu, (*f.*), 25, *Coal-carrier.*	Coal	The deceased fractured her leg by a fall of roof coal and died on the 24th January, after being delivered of a dead child.
10	28th January, 11 A.M.	Namdang Mine, Margherita P. O., Lakhimpur, Eastern Bengal and Assam.	Assam Railways and Trading Co., Ld.	Holi Bux, (*m.*), 23, *Coal-cutter.*	Coal	The deceased and two others had been cutting coal and were sitting down resting when about two tubs of coal fell on them. Two were slightly injured but the deceased so seriously that he died about 9 P.M.
11	30th January, 4 P.M.	Namdang Mine, Margherita P. O., Lakhimpur, Eastern Bengal and Assam.	Assam Railways and Trading Co., Ld.	Notobar Urya, (*m.*), 29, *Basket-filler.*	Coal	The deceased was filling a basket when about a cwt. of mud fell on him and injured him so seriously that he died on the way to the hospital.
12	1st February, 3 A.M.	Huntodih Mine, Mohoda P. O., Manbhum, Bengal.	Huntodih Coal Co., Ld.	Chandey Majhi, (*m.*), 35, *Miner.*	Coal	The deceased was cutting coal in a dip gallery when a triangular piece of roof 16 ft. along the base by 10 ft. perpendicular by 1′ 3″ thick, suddenly fell on him killing him instantaneously. Inspection and inquiry made.
13	1st February, 2 P.M.	Mysore Mine, Kabulayatkatti P. O., Dharwar, Bombay.	Mysore Gold Mining Co., Ld.	Chandiah, (*m.*), 24, *Coolie.*	Gold	Killed by a fall of roof whilst putting in timber supports. Inspection and inquiry made.
14	1st February, 3 P.M.	Dhundabad Mine, Sitarampur P. O., Burdwan, Bengal.	New Manbhum Coal Co., Ld.	Soomi Majhain, (*f.*), 26, *Coal-kamin.*	Coal	The deceased went under some overhanging stone, near the face of a working place to fill her basket, when the stone fell on her causing injuries from which she died in about an hour after. Inspection and inquiry made.
15	26th February, 2 P.M.	Sinidih Mine, Katrasgarh P. O., Manbhum, Bengal.	Sinidih Coal Co., Ld.	Raman Kumar, (*m.*), 35, *Miner.*	Coal	The deceased cut the corner of a pillar, dislodging a stone from the roof 4′ 3″ × 1′ 7″ × 10″, which fell on him, injuring his lungs and causing death within an hour. *See Report, page 8.* Inspection and inquiry made.

APPENDIX I—*contd.*

Fatal Accidents, 1908—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*contd.*			
			(*a*) Falls of roof—*contd.*			
16	27th February, 5 P.M.	Kustore Mine, Kusunda P.O., Manbhum, Bengal.	Raniganj Coal Association, Ld.	Kewal Gope, (*m.*), 30, *Propping coolie.*	Coal .	Injured by the fall of a piece of stone while he was engaged in holing a pillar for putting in props. Died on the 29th February.
17	21st March, 1 P.M.	Napara Mine, Asansol P. O., Burdwan, Bengal.	Damra Coal Co., Ld.	Jangu Bauri, (*m.*), 35, *Coal-cutter.*	Coal .	He was wedging down a slab of undercut coal in the face of a gallery when the mass suddenly fell on him, fracturing his leg. He died on the 7th April. Inspection and inquiry made.
18	28th March, 5-45 P.M.	Raghunathbatty Mine, Sitarampur P. O., Burdwan, Bengal.	Sudihi Coal Co., Ld.	Charon Dome, (*m.*), 65, *Bricklayer.*	Coal .	While building a brick arch where the incline enters the mine, a stone from the roof fell on him and fractured his head. He died within half an hour. Inspection and inquiry made.
19	3rd April, 9 P.M.	Hosur Mine, Kabulayatkatti P. O., Dharwar, Bombay.	Champion Reef Gold Mining Co.	Amavashi, (*m.*), 25, *Jumper coolie.*	Gold .	The deceased and another coolie began work after blasting without taking down the stone loosened by the blast, when a piece of rock fell on him and fractured his skull. Inspection and inquiry made.
20	9th April, 3-20 P.M.	Serampur Mine, Giridih P. O., Hazaribagh, Bengal.	East Indian Railway Co.	Barju Singh, (*m.*), 35, *Coal-cutter.* Gangia Ghatwarin, (*f.*), 17, Sonia Ghatwarin, (*f.*), 16, *Coal-carriers.*	Coal .	While the three deceased were working under propped roof coal, the coal pulled over from two slips and a large quantity fell on them and smothered them to death. *See Report, page 8.* Inspection and inquiry made.
21	30th May, 11 A.M.	East Ledo Mine, Margherita P. O., Lakhimpur, Eastern Bengal and Assam.	Assam Railways and Trading Co., Ld.	Gonjoo Rout, (*m.*), 32, *Basket-filler.*	Coal .	Killed by a fall of coal.
22	8th June, 10-15 A.M.	Banksimulla Mine, Charanpur P. O., Burdwan, Bengal.	Bengal Coal Co., Ld.	Lakkhu Majhi, (*m.*), 30, *Coal-cutter.*	Coal .	He was cutting roof-coal when a mass of coal and stones fell upon him and killed him. *See Report, page 8.* Inspection and inquiry made.
23	21st June, 12 Noon.	Gopalichak Mine, Jharia P. O., Manbhum, Bengal.	Gopalichak Coal Co., Ld.	Sudin Ahir, (*m.*), 35, *Coal-cutter.*	Coal .	Deceased and another coal-cutter were repairing a level with an unsound coal roof in company with a gang of repairers. The roof showed signs of falling and the repairers withdrew. The coal-cutters attempted to finish filling a tub when a fall of about 9′×5′×2′ 9″ occurred, killing deceased on the spot. *See Report, page 8.* Inspection and inquiry made.
24	23rd June, 1 P.M.	East Ledo Mine, Margherita P. O., Lakhimpur, Eastern Bengal and Assam.	Assam Railways and Trading Co., Ld.	Biput, (*m.*), 22, *Coal-cutter.*	Coal .	About three tons of coal fell without warning and suffocated him.

APPENDIX I—*contd.*

Fatal Accidents, 1908—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*contd.*			
			Falls of roof—*contd.*			
25	10th July, 11-30 A.M.	New Tetturia Mine, Katrasgarh P. O., Manbhum, Bengal.	New Tetturia Coal Co., Ld.	Jemahir Bhuia, (*m.*), 25, *Fitter's coolie.*	Coal	He was working with some fitters, putting on a pipe, when a stone 9′×8′×6′ suddenly fell, killing him instantly. Inspection and inquiry made.
26	11th July, 6 A.M.	Sodepur Mine, Sitarampur P. O., Burdwan, Bengal.	Bengal Coal Co., Ld.	Dali Kundu, (*m.*), 37, *Assistant sirdar.*	Coal	He was about to withdraw a a prop when a slight weighing of the roof was heard. He waited and then pushed the prop. This dislodged a large piece of coal which fell on him injuring him so severely that he died four days later. *See Report, page 9.* Inspection and inquiry made.
27	15th July, 1 P.M.	Bhagaband Mine, Jharia P. O., Manbhum, Bengal.	Borrea Coal Co., Ld.	Etwari Kole, (*m.*), 35, *Miner.* Radhia Bhobitain, (*f.*), 22, *Coal-carrier.*	Coal	They went through a fence into some old workings and began to cut coal when a fall occurred 22′×11′×6″ killing them instantly. Inspection and inquiry made.
28	25th July, 5 A.M.	Tikak Mine, Margherita P. O., Lakhimpur, Eastern Bengal and Assam.	Assam Railways and Trading Co., Ld.	Dhiroj Gore, (*m.*), 32, *Basket-filler.*	Coal	Killed by a fall of roof while filling a basket.
29	14th August, 11-30 A.M.	New Tetturia Mine, Katrasgarh P. O., Manbhum, Bengal.	New Tetturia Coal Co., Ld.	Jhari Gope, (*m.*), 24, *Miner.*	Coal	Killed by a fall of roof. Inspection and inquiry made.
30	22nd August, 9 P.M.	Sijua Mine, Sijua P. O., Manbhum, Bengal.	Sijua Coal Co., Ld.	Kishni Majhain, (*f.*), 27, *Coal-carrier.*	Coal	She was sitting in a gallery when a small quantity of roof coal fell on her. She received no injuries but died soon after from shock. Inspection and inquiry made.
31	16th September, 10-30 A.M.	Takrai Mine, Khost Colliery, Khost P. O., Sibi, Baluchistan.	North-Western Railway.	Khudadad, (*m.*), 25, *Coolie.*	Coal	The deceased and two others were going down a gateway to withdraw some timber when a heavy fall occurred burying him. He was suffocated before he could be liberated. Inspection and inquiry made.
32	22nd September, 9 A.M.	Bhagaband Mine, Jharia P. O., Manbhum, Bengal.	Borrea Coal Co., Ld.	Roghu Kora, (*m.*), 25, *Propping carpenter.*	Coal	Killed by a fall of roof while attending a call of nature in a fenced off place. Inspection and inquiry made.
33	27th September, 8 P.M.	Bejdih Mine, Sitarampur P. O., Burdwan, Bengal.	Macneill and Co.	Baya Bauri, (*m.*), 40, *Miner.*	Coal	While working in a gallery the stone roof fell and knocked the deceased into the bottom of the shaft 9′ 6″ below, killing him instantly. Inspection and inquiry made.
34	29th September, 11-30 A.M.	Serampur Mine, Giridih P. O., Hazaribagh, Bengal.	East Indian Railway Co.	Subratti Meah, (*m.*), 22, *Miner.*	Coal	Six men were sitting when a pane of sandstone 9″ thick fell from the roof and in rebounding struck them, causing serious injuries to four, one of whom, Subratti, subsequently died. The other two received slight injuries. Inspection and inquiry made.

APPENDIX I—*contd.*

Fatal Accidents, 1908—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*contd.*			
			Falls of roof—*concld.*			
35	6th October, 12 Noon.	Kendwadih Mine, Jharia P. O., Manbhum, Bengal.	Hariladih Coal Co., Ld.	Garu Kahar, (*m.*), 55, Kokil Kahar, (*m.*), 13, *Stone-cleaners.*	Coal .	They were cleaning up stones from a previous fall when a stone 4′ by 4″ in the centre to 0″ at the rim fell upon them. Garu died in 3 hours, and Kokil in 3 days' time. Inspection and inquiry made.
36	20th October, 4-20 P.M.	Tikak Mine, Margherita P. O., Lakhimpur, Eastern Bengal and Assam.	Assam Railways and Trading Co., Ld.	Alladi, (*f.*), 24, *Basket-filler.*	Coal .	She was filling a basket when a fall from the roof completely buried and suffocated her to death.
37	21st November, 3 A.M.	North Kustore Mine, Kusunda P. O., Manbhum, Bengal.	Raniganj Coal Association, Ld.	Gokul Mahato, (*m.*), 30, Bhukan Mahato, (*m.*), 25, Gurdyal Mahato, (*m.*), 22, Tulu Mahato, (*m.*), 20, Horil Mahato, (*m.*), 35, Bhikan Singh, (*m.*), 18, Tanu Singh, (*m.*), 35, *Coal-cutters.*	Coal .	They went beyond a fence for the purpose of filling up some loose coal, and the roof, which was insecure, fell upon them and killed them. *See Report, page 9.* Inspection and inquiry made.
38	25th November, 5 P.M.	North Kustore Mine, Kusunda P. O., Manbhum, Bengal.	Raniganj Coal Association, Ld.	Amir Meah, (*m.*), 35, Khosru Meah, (*m.*), 35, Raji Meah, (*m.*), 45, Huru Meah, (*m.*), 40, Bhadi Meah, (*m.*), 40, Mohor Meah, (*m.*), 40, Jumun Meah, (*m.*), 22, *Coal-cutters.* Jaffir Bibi, (*f.*), 22, *Coal-carrier.*	Coal .	They were taking out a pillar of coal and had proceeded about 6 feet in the bottom part of the seam, when the top coal came away to a parting, and pushing over the timber fell upon them and killed them. *See Report, page 9.* Inspection and inquiry made.
39	16th December, 2-30 A.M.	Mucheridih Mine, Mohoda P. O., Manbhum, Bengal.	Mucheridih Coal Co., Ld.	Bossea Passin, (*f.*), 13, *Coal-carrier.*	Coal .	She was carrying coal for her father who deliberately left the place assigned to him and went in to a rise gallery nearer the tubs. He had cut a few basket leads when a fall 5′ 8″×3′ 6″×1′ 2″ occurred killing the child instantaneously. *See Report, page 10.* Inspection and inquiry made.
40	17th December, 8 P.M.	Murulidih Mine, Mohoda P. O., Manbhum, Bengal.	Bengal Coal Co., Ld.	Makhani Hari, (*f.*), 23, *Coal-carrier.*	Coal .	She was filling her basket in a gallery which was being widened, when a piece of roof 8′3″×2′3″×2″ fell on her killing her instantly. *See Report, page 10* Inspection and inquiry made.
41	19th December, 3 A.M.	Chanch Mine, Barakar P. O., Manbhum, Bengal.	Bengal Coal Co., Ld.	Lohi Rai, (*m.*), 34, *Miner.*	Coal .	Killed by a fall of roof stone whilst robbing coal in a fenced off gallery. Inspection and inquiry made.

APPENDIX I—*contd.*

Fatal Accidents, 1908—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*contd.*			
			(*b*) Falls of side—(*31 deaths*).			
42	3rd January, 5 P.M.	Manehti Mine, Rewari P. O., Gurgaon, Punjab.	Sohan Lall	Deda Chamar, (*m.*), 40, *Quarryman.*	Slate	The deceased was preparing to dislodge a piece of slate weighing about two tons when it suddenly fell on him and crushed his shoulder so severely that he died the next day. Inspection and inquiry made.
43	10th January, 11 A.M.	Gansadih Mine, Kusunda P. O., Manbhum, Bengal.	Prosanna Kumar Roy.	Teku Teli, (*m.*), 36, *Miner.*	Coal	The deceased was cutting at a pillar when a piece of coal, 9′ × 2′ 10″ × 2′ 6″, fell from a muddy slip killing him instantaneously. Inspection and inquiry made.
44	22nd January, 1 P.M.	Baraboni Mine, Asansol P. O., Burdwan, Bengal.	Baraboni Coal Concern, Ld.	Kabi Kora, (*m.*), 32, *Miner.*	Coal	The deceased was robbing a pillar, and on undercutting a piece of coal it fell on him and killed him. Inspection and inquiry made.
45	24th January, 3-30 P.M.	Salgadih Mine, Tisri P. O., Hazaribagh, Bengal.	Mica Export Co.	Dilu Rai, (*m.*), 35, Ganpat Tewari, (*m.*), 30, *Coolies.*	Mica	A sudden fall of side took place killing Dilu and seriously injuring Ganpat. The latter died on the 26th January.
46	10th February, 3 P.M.	Murwara Mine, Katni P. O., Jabalpur, Central Provinces.	R. Dunne and Sons.	Bahadur, (*m.*), 28, Pachai, (*m.*), 29, Dhantali, (*m.*), 33, Jawaliez, (*m.*), 30, Bahora, (*m.*), 28, Teji Kurmi, (*m.*), 28, Manhodi, (*m.*), 30, *Quarrymen.*	Limestone.	They were working at the bottom of a quarry and were buried by a fall of the eastern wall. Two others were injured. *See Report, page 10.* Inspection and inquiry made.
47	17th February, 9 A.M.	Garividi Mine, Vizianagram P. O., Vizagapatam, Madras.	Bobbili Mining Co., Ld.	T. Appadu, (*m.*), 13, *Quarryman.*	Manganese	Three men were excavating in a pit said to be about 5 feet deep, when one of the sides fell in on them. Deceased was suffocated and the other two men bruised. Inspection and inquiry made.
48	12th May, 4-45 P.M.	Munsar Mine, Kamptee P. O., Nagpur, Central Provinces.	Central Provinces Prospecting Syndicate, Ld.	Ramlah, (*f.*), 25, *Coolie.*	Manganese	She was working near the top of a bench 20′ high when a boulder fell a distance of about 3′ and struck her, killing her on the spot. Inspection and inquiry made.
49	14th May, 5-30 P.M.	Murwara Mine, (Plot No. 1129), Murwara P. O., Jabalpur, Central Provinces.	A. H. Wheeler and Co.	Chuna Chamar, (*m.*), 25, *Quarryman.*	Limestone	A gang of men were breaking up a large mass of slipped earth when about ½ a ton of it became detached and rolled on them pinning down two men, one of whom, Chuna, died subsequently from the effects of the injuries received. Inspection and inquiry made.
50	15th May, 4-15 P.M.	Kandri Mine, Kamptee P. O., Nagpur, Central Provinces.	Central Provinces Syndicate, Ld.	Mangal, (*m.*), 35, *Coolie.*	Manganese	He and others were clearing up the floor of a well which had been newly sunk, when a fall of side took place burying and suffocating deceased. Inspection and inquiry made.

APPENDIX I—*contd.*

Fatal Accidents, 1908—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
		FALLS OF ROOF AND SIDES—*contd.*				
		(*b*) Falls of side—*contd.*				
51	26th May, 1 P.M.	Jamadoba Mine, Jharia P. O., Manbhum, Bengal.	Indian Collieries Syndicate, Ld.	Nayka Manjhi, (*m.*), 32, *Miner.*	Coal	He was found dead under about a ton and a half of coal which had fallen from a corner of a pillar. *See Report, page 11.* Inspection and inquiry made.
52	11th June, 1 A.M.	Kendwadih Mine, Kusunda P. O., Manbhum, Bengal.	East Indian Coal Co., Ld.	Modhu Turi, (*m.*), 28, *Miner.*	Coal	He left his proper working place and with a woman went into a disused gallery nearly 400 feet away, took down the fencing and cut away the corner of a pillar. A fall about 11′×6′×3′ fell on him, killing him instantly. The woman was injured slightly. Inspection and inquiry made.
53	11th June, 4 P.M.	Mouthdih Mine, Sitarampur P. O., Burdwan, Bengal.	A. C. Chatterji	Nitu Baurini, (*f.*), 30, *Earth-carrier.*	Coal	Eight or nine people were resting under a cliff 10 feet high formed by the overburden, when about half a ton of clay fell killing Nitu on the spot and slightly injuring two others. *See Report, page 11.* Inspection and inquiry made.
54	10th July, 3 P.M.	Kustore Mine, Kusunda P. O., Manbhum, Bengal.	Raniganj Coal Association, Ld.	Gope Bauri, (*m.*), 50, *Miner.*	Coal	He had started to split the pillar, with a view to its being got and goafed, and liberated a piece of its side 17′×7′×4′ which fell upon him killing him instantly. Inspection and inquiry made.
55	26th August, 2 P.M.	Birsingpur Mine, Nirshachati P. O., Manbhum, Bengal.	Annapurna Coal Co.	Hemu Singh, (*m.*), 19, *Coal-cutter.*	Coal	While robbing the side of a pillar in a fenced off place a slab of coal 7′ 6″×2′ 0″×15″ fell on him and cut him about the head so severely that he died three hours later. *See Report, page 11.* Inspection and inquiry made.
56	2nd October, 5 P.M.	Sudamdih Mine, Bhujudih P. O., Manbhum, Bengal.	Sudamdih Coal Co., Ld.	Kitu Bauri, (*m.*), 20, Kartic Bauri, (*m.*), 30, *Coal-cutters.* Peli Baurini, (*f.*), 25, *Coal-carrier.*	Coal	Kitu and Kartic were cutting coal from the overhanging side of an old quarry instead of from their proper working place, when a fall of side occurred, killing them, and Peli almost instantaneously. Inspection and inquiry made.
57	10th October, 8 P.M.	Taroktan Mine, Mogok P. O., Ruby Mines District, Burma.	The Burma Ruby Mines, Ld.	Paw Shin Paw, (*m.*), 28, *Coolie.*	Ruby	Broke his right leg by a fall of side through the effects of which he died on the 14th October.
58	16th October, 7·30 P.M.	Lodna Mine, Jharia P. O., Manbhum, Bengal.	Lodna Colliery Co., Ld.	Lukhi Majhain, (*f.*), 30, *Slack-carrier.*	Coal	She was with others engaged in floor cutting and removal of slack, and with them went into a level which had been marked off as dangerous, when a piece of the side pillar fell on them. Lukhi was killed instantly and another man injured. Inspection and inquiry made.
59	2nd December, 1·30 P.M.	Salanpur Mine, Sitarampur P. O., Burdwan, Bengal.	Borrea Coal Co., Ld.	Karchowa Marpi, (*m.*), 21, *Coal-cutter.*	Coal	Deceased was dressing down some overhanging side 8′ high, lying against a slip, when it fell and knocked him down injuring his spine. He died two days later. Inspection and inquiry made.

APPENDIX I—*contd.*

Fatal Accidents, 1908—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*concld.*			
			(*b*) Falls of side—*concld.*			
60	16th December, 10 A.M.	Jogta Mine, Sijua P. O., Manbhum, Bengal.	Agabeg Brothers.	Dhanwa Kamin, (*f.*), 45, *Coal-carrier.*	Coal	She was with a miner who was cutting floor coal when a pillar collapsed and rolled down on to her killing her instantly. Inspection and inqairy made.
61	18th December, 10-30 P.M.	Kusunda Mine, Kusunda P. O., Manbhum, Bengal.	Kusunda and Nayadi Collieries, Ld.	Koili Mohulin, (*f.*), 27, Jini Mohulin, (*f.*), 32, Sugia Mohulin, (*f.*), 44, *Coal-carriers.*	Coal	Killed by the fall of a large portion of a pillar corner. *See Report, page 11.* Inspection and inquiry made.
			IN SHAFTS—(*27 deaths*).			
			Ropes and chains breaking—(*1 death*).			
62	1st April, 12 Noon.	Mysore Mine, Kabulayatkatti P. O., Dharwar, Bombay.	Mysore Gold Mining Co., Ld.	Hanamantha, (*m.*), 25, *Drilling coolie.*	Gold	He was drilling in the bottom of the shaft when the winding rope broke and the skip ran amain to the bottom and struck him, killing him instantly. Inspection and inquiry made.
			Whilst ascending and descending by machinery—(*9 deaths*).			
63	3rd February, 7 P.M.	Dishargarh Mine, Dishargarh P. O., Burdwan, Bengal.	Equitable Coal Co., Ld.	Jhaku Muchi, (*m.*), 22, *Trammer.* Jugal Muchi, (*m.*), 28, *Signalman.* Juna Bauri, (*m.*), 38, *Roller coolie.*	Coal	The three deceased and three others were being lowered into a pit when one end of the cage, while in motion, got caught, and the shock of the momentary stoppage caused the three deceased to fall out to the bottom of the pit. Death was instantaneous. Inspection and inquiry made.
64	15th March, 9-30 A.M.	Sanctoria Mine, Dishargarh P. O., Burdwan, Bengal.	Bengal Coal Co., Ld.	Joyram Teli, (*m.*), 30, *Coal-cutter.*	Coal	The deceased along with others was being raised up a shaft. He was in a sitting posture and supporting himself in that position by leaning on a stick; the stick slipped, and he fell out of the cage and down the pit and was killed instantaneously. Inspection and inquiry made.
65	25th June, 3-30 P.M.	Jharia Khas Mine, Jharia P. O., Manbhum, Bengal.	Standard Coal Co., Ld.	Ganga Chamarin, (*f.*), 14, *Coal-carrier.*	Coal	She and four other women were being lowered down a shaft in a cage, when she fell out to the bottom of the pit and was killed instantly. Inspection and inquiry made.
66	21st December, 5-30 P.M.	Kanchka Mine, Kalipahari P. O., Burdwan, Bengal.	Damra Coal Co., Ld.	Kusmi Baurini, (*f.*), 22, Sukhi Baurini, (*f.*), 23, Abhoy Baurini, (*f.*), 28, Bidhu Baurini, (*f.*), 22, *Coal-carriers.*	Coal	They were ascending a shaft in a bucket, and as they reached the surface the banking coolies pushed over the trolley too quickly. One of the hooks of the bucket caught under the edge of the trolley. As the bucket ascended it released itself with a violent jerk and swung across the shaft, where it struck the planking. This caused one of the chains to become detached with the result that the women were precipitated to the bottom of the shaft and killed on the spot. Inspection and inquiry made.

APPENDIX I—*contd.*

Fatal Accidents, 1908—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			IN SHAFTS—*contd.*			
			Falling into the shaft from the surface—(*6 deaths*).			
67	6th March, 12-30 A.M.	Kendwadih Mine, Kusunda P. O., Manbhum, Bengal.	East Indian Coal Co., Ld.	Bhaglu Dhobi, (*m.*), 20, *Trolleyman.*	Coal .	Killed by falling down the pit from the surface. *See Report, page 12.* Inspection and inquiry made.
68	19th June, 2-30 P.M.	Jharia Khas Mine, Jharia P. O., Manbhum, Bengal.	Standard Coal Co., Ld.	Jhamun Meah, (*m.*), 25, *Trolleyman.*	Coal .	He was standing on a trolley which was over the pit, and when the trolley was drawn back, he lost his balance and fell over the front of the trolley into the pit, 110 feet deep, and was killed instantly. *See Report, page 12.* Inspection and inquiry made.
69	30th July, 6 P.M.	Brahmanbarari Mine, Jharia P. O., Manbhum, Bengal.	East Indian Coal Co., Ld.	Rasu Singh, (*m.*), 22, *Stone-cutter.*	Coal .	He appears to have jumped over a fence into a pit, 425 feet deep, probably under the influence of "ganja" and was killed instantly. Inspection and inquiry made.
70	26th August, 9 P.M.	Pottery Mine, Raniganj P. O., Burdwan, Bengal.	Burn & Co. .	Jugal Dass, (*m.*), 17, *Coal stocking coolie.*	Coal .	While he was sleeping near the pit at night it began to rain, and in running for shelter he ran into the pit and was killed. Inspection and inquiry made.
71	12th September, 2 A.M.	Lutchipur Mine, Sitarampur P. O., Burdwan, Bengal.	Lutchipur Coal Co., Ld.	Bhicku Turi, (*m.*), 29, *Coal-cutter.*	Coal .	Deceased was impatient to enter the cage, and instead of waiting for the pit mouth fence bar to be lifted, it is surmised that he crawled underneath it, and mistaking which side the cage was on fell down a shaft 356 feet deep and was killed instantly. *See Report, page 12.* Inspection and inquiry made.
72	25th September, 11 A.M.	Baustakola Mine, Jharia P. O., Manbhum, Bengal.	New Beerbhum Coal Co., Ld.	Monger Mahato, (*m.*), 32, *Trolleyman.*	Coal .	He fell out of a trolley to the bottom of the shaft while attempting to disengage a bucket which had got caught in another while being lifted. Inspection and inquiry made.
			Falling from part of the way down—(*5 deaths*).			
73	7th January, Midday.	Taroktan Mine, Mogok P. O., Ruby Mines District, Burma.	Burma Ruby Mines, Ld.	Po Thin, (*m.*), 21, *Greaser.*	Ruby .	He was about 40 feet from the bottom of the shaft attending to the pump, when his clothes got caught in the revolving shaft, and he was thrown off the platform to the bottom of the shaft, and fractured his skull.
74	31st January, 12-10 A.M.	Mysore Mine, Kabulayatkatti P. O., Dharwar, Bombay.	Mysore Gold Mining Co., Ld.	Krishami, (*m.*), 25, *Blaster maistry.*	Gold .	Whilst ascending a ladder he stopped 40′ below the surface to relight his candle, and in doing so he fell to the bottom and received injuries from which he died a few days later. Inspection and inquiry made.
75	17th February, 12-30 A.M.	Salanpur Mine, Sitarampur P. O., Burdwan, Bengal.	Borrea Coal Co., Ld.	Behari Muchi, (*m.*), 30, *Fitter.*	Coal .	The deceased with other men was working in the pit shaft. He was pulling aside a capstan rope by which a heavy pump valve chamber was being lifted, when the rope suddenly began to lower, and the deceased not letting go his hold in time overbalanced himself, fell down the pit and was killed instantly.

APPENDIX I—*contd.*

Fatal Accidents, 1908—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
		IN SHAFTS—*contd.*				
		Falling from part of the way down—*contd.*				
76	15th May, 4 P.M.	Gladstone Mine, Mahulia P. O., Singhbhum, Chota Nagpur	Cape Copper Co., Ld.	Thomas Ralph, (*m.*), 38, *Miner.*	Copper .	The deceased was going down in a kibble, and it is presumed, that in getting out at the 135 feet level he slipped and fell to the bottom and was killed instantly. Inspection and inquiry made.
77	15th June, 8-30 P.M.	Sodepur Mine, Sitarampur P. O., Burdwan, Bengal.	Bengal Coal Co., Ld.	Lolita Baurini, (*f.*), 45, *Water-bailing kamin.*	Coal .	The deceased and another woman were descending an up cast shaft, 417 feet deep, when she fell out of the cage to the bottom. Inspection and inquiry made.
		Things falling from the surface—(*3 deaths*).				
78	19th March, 3-35 P.M.	East Kurdih Mine, Kalipahari P. O., Burdwan, Bengal.	East Kurdih Coal Co., Ld.	Protap Gope, (*m.*), 35, *Coolie.*	Coal .	Whilst six men were being lowered down the shaft on to a scaffold the winding pulley fell owing to one of the supporting beams drawing out. The scaffold was demolished, and the cage fell to the bottom with the result that the deceased's spine was fractured and two of the other men were seriously injured. *See Report, page 12.* Inspection and inquiry made.
79	17th May, 12-30 A.M.	Sunpur Mine, Chora P. O., Burdwan, Bengal.	Ondal Coal Co., Ld.	Yargar Singh, (*m.*), 18, *Sinker.*	Coal .	While the deceased and three others were working at the bottom of a sinking shaft, 170 feet in depth, an iron crowbar fell from the surface and struck him on the forehead. He died six days later. Inspection and inquiry made.
80	8th June, 10 A.M.	Lutchipur Mine, Sitarampur P. O., Burdwan, Bengal.	Lutchipur Coal Co., Ld.	Hira Bauri, (*m.*), 31, *Coal-cutter.*	Coal .	The deceased and two others were cleaning out the sump of a newly sunk shaft when a 7″ bolt fell from the head gear and struck him on the leg fracturing it; gangrene supervened, and he died fifteen days after. *See Report, page 13.* Inspection and inquiry made.
		Miscellaneous—(*3 deaths*).				
81	8th July, 2 A.M.	Bhowra Mine, Jharia P. O., Manbhum, Bengal.	Eastern Coal Co., Ld.	Meghu Mahato, (*m.*), 25, *Pump khalassi.*	Coal .	He went down the shaft on a vertical rope ladder at night to the pump, and presumably fell as he was coming up again, sustaining a fractured skull and being drowned. Inspection and inquiry made.
82	25th August, 2 P.M.	Dishargarh Mine, Dishargarh P. O., Burdwan, Bengal.	Equitable Co Co., Ld.	Sham Behari Lalla, (*m.*), 49, *Water-bailer.*	Coal .	The deceased fell from an unfenced platform at a side entrance to a working shaft, a distance of 106 feet to the pit bottom, and was killed instantly. *See Report, page 13.* Inspection and inquiry made.
83	9th October, 7 P.M.	Hosur Mine, Kabulayatkatti P. O., Dharwar, Bombay.	Hosur Gold Mines of Dharwar, Ld.	Sunjivi (*m.*), 35, *Coolie.*	Gold .	While the deceased was working at the bottom of a shaft a skip which was being hoisted up fell on him owing to an accident occurring to the winding engine. He was killed instantly.

APPENDIX I—*contd.*

Fatal Accidents, 1908—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			BY EXPLOSIVES—(*8 deaths*).			
84	21st May, 10-40 A. M.	Bitagarha Mine, Kurhurbari Colliery, Giridih P. O., Hazaribagh, Bengal.	East Indian Railway Co.	Teju Meah, (*m.*), 30, *Coal-cutter.*	Coal .	He was dressing back, with a hammer, the sides of a road in which blasting had been done, when an explosion occurred and flying pieces of stone struck him inflicting wounds from which he died shortly after. *See Report, page 13.* Inspection and inquiry made.
85	23rd May, 1 P.M.	Mysore Mine, Kabulayatkatti P. O., Dharwar, Bombay.	Mysore Gold Mining Co., Ld.	Raja, (*m.*), 29, *Maistry.* Mayan, (*m.*), 32, *Drilling coolie.*	Gold .	Raja and twelve men were working in a shaft, he attempted to clean out an old shot hole when an explosion took place, apparently from a missfired shot. Raja and Mayan were killed and two others injured. Inspection and inquiry made.
86	6th August, Midday.	Kasboi Mine, Quetta P. O., Quetta Pishin, Baluchistan.	C. R. Lindsey.	Jan Mahomed, (*m.*), 40, *Jemadar.*	Chromite .	After three shots had been fired seven men went to clear away the rubbish when they found the side settling down. They hurried back, but two men were too late and were caught by the collapsing wall. One was killed outright and the other injured seriously.
87	10th October, 3 P.M.	Kandri Mine, Kamptee P. O., Nagpur, Central Provinces.	Central Provinces Prospecting Syndicate, Ld.	Saman, (*m.*), 50, *Quarryman.*	Manganese	He commenced drilling in a shot hole which was supposed to have blown out and an explosion resulted. He died two days later. Inspection and inquiry made.
88	13th October, 3 A.M.	Hosur Mine, Kabulayatkatti, P. O., Dharwar, Bombay.	Dharwar Gold Mines Co., Ld.	Kumbari Appu, (*m.*), 30, *Drilling coolie.*	Gold .	He and two others were boring into a missfired socket when the charge exploded and injured him so severely that he died a few days later.
89	23rd December, 5-45 P.M.	Saltore Mine, Dishargarh P. O., Manbhum, Bengal.	Saltore Coal Co., Ld.	Jadu Singh, (*m.*), 32, Jeo Singh, (*m.*), 29, *Sinkers.*	Coal .	The deceased were drilling a shot hole at the bottom of a sinking shaft unconscious of the presence of a missfired shot $4\frac{1}{2}$' away, when the latter exploded and injured them so badly that they died a few days later. *See Report, page 13.* Inspection and inquiry made.
			IRRUPTIONS OF WATER OR FALLING INTO WATER.—(*2 deaths*).			
90	23rd May, 8-30 P.M.	Charanpur Mine, Charanpur P. O., Burdwan, Bengal.	Reliance Coal Co., Ld.	Rathu Mahalin, (*f.*), 30, *Surface labourer.*	Coal .	The deceased was subject to epileptic fits, and it is supposed that whilst bathing on the steps of the tank she had a fit, fell into the water, and was drowned. Inspection and inquiry made.
91	27th August, 9 A.M.	Baraboni Mine, Asansol, P. O., Burdwan, Bengal.	Baraboni Coal Concern, Ld.	Dhona Bauri, (*m.*), 45, *Coal-cutter.*	Coal .	Whilst standing on a pump scaffold and cutting a niche in the wall of the shaft he fell into the water 30 inches below and was drowned. Inspection and inquiry made.

APPENDIX I—*contd.*

Fatal Accidents, 1908—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			HAULAGE—(*22 deaths*).			
92	27th January, 2 P.M.	Kuordih Mine, Kalipahari P. O., Burdwan, Bengal.	Kuordih Coal Co., Ld.	Karu Khaira, (*m.*), 55, *Coal-cutter.*	Coal	Whilst a train of five tubs was being raised a slope of 1 in 3, a coupling chain broke and four tubs ran amain. The "trailer" derailed the tubs, but they rolled down the incline and struck deceased killing him on the spot. Inspection and inquiry made.
93	28th January, 9-30 P.M.	Ena Mine, Dhanbaid P. O., Manbhum, Bengal.	North West Coal Co., Ld.	Chobi Lal, (*m.*), 35, *Miner.*	Coal	Six tubs were being lowered into an incline when the two front ones ran amain and over deceased injuring him. He died later on. Inspection and inquiry made.
94	12th February, 1 P.M.	West Ledo Valley Mine, Margherita P. O., Lakhimpur, Eastern Bengal and Assam.	Assam Railways and Trading Co., Ld.	Rania, (*m.*), 26, *Miner.*	Coal	He was knocked down and killed by two empty tubs which ran amain.
95	14th February, 7 A.M.	West Ledo Valley Mine, Margherita P. O., Lakhimpur, Eastern Bengal and Assam.	Assam Railways and Trading Co., Ld.	Kartic, (*m.*), 24. *Hookman.*	Coal	A loaded tub ran amain and dashed against an empty tub which in its turn knocked the man down and injured him so seriously that he died shortly after.
96	27th March, 2 A.M.	Murulidih Mine, Mohoda P. O., Manbhum, Bengal.	Bengal Coal Co., Ld.	Girdhari Roy, (*m.*), 21, *Tub-pusher.*	Coal	Six tubs were being lowered down an incline when the three front ones got away and ran wild down the inclnie, killing deceased. Inspection and inquiry made.
97	8th April, 6 P.M.	No. 3 Mine, Khost Colliery, Khost P. O., Sibi, Baluchistan.	North-Western Railway.	Wali, (*m.*), 23, *Tram-coolie.*	Coal	The deceased with two others was engaged shunting empty tubs at the bottom of a haulage road, when the drawbar of the first tub of a loaded set being raised at the time broke and allowed the loaded tubs to dash into the bottom. Wali was killed outright and the others slightly injured. Inspection and inquiry made.
98	1st May, 8 A. M.	Bhalgora Mine, Jharia P. O., Manbhum, Bengal.	Bhalgora Coal Co., Ld.	Somor Kahar, (*m.*), 35, *Miner.*	Coal	He was walking down a haulage plane which was not used as a travelling road and was run over by the empty journey going down. *See Report, page 14.* Inspection and inquiry made.
99	31st May, 6-30 A.M.	Namdang Mine, Margherita P. O., Lakhimpur, Eastern Bengal and Assam.	Assam Railways and Trading Co., Ld.	Baroda, (*f.*), 30, *Coal-carrier.*	Coal	Whilst on her way to work she was run over and killed by a train of full tubs.
100	4th July, 6 A.M.	Chinchuria Mine, Asansol P. O., Burdwan, Bengal.	New Beerbhum Coal Co., Ld.	Falarie Majhi, (*m.*), 20, *Shunter.*	Coal	Three tubs whilst being lowered down a slope stopped on a flattened part. Falarie went up the slope and pushed them over the flat. After that, it is presumed, he rode on the ropes behind the tubs and was thrown off with such violence that he sustained a fractured skull and internal injuries. He died three days later. Inspection and inquiry made.
101	10th August, 1-30 A.M.	Barkui Mine, Pench Valley P. O., Chhindwara, Central Provinces.	Pench Valley Coal Co., Ld.	Gayadin Kachi, (*m.*), 27, *Shot-firer.*	Coal	He was sleeping at the side of the haulage incline, when a train of six empty tubs became derailed and ran over him causing injuries from the effects of which he died shortly after. Inspection and inquiry made.

APPENDIX I—*contd.*

Fatal Accidents, 1908—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			HAULAGE—*contd.*			
102	24th August, 11-30 A.M.	Bagdiggi Mine, Jharia P. O., Manbhum, Bengal.	C. J. Smith.	Mungia Gowalin, (*f.*), 45, Tottrie Gowalin, (*f.*), 45, *Road-cleaners.*	Coal .	A full journey had been brought to the surface and the tubs uncoupled, when one ran down the incline and killed the two women. *See Report, page 14.* Inspection and inquiry made.
103	6th September, 5-30 A.M.	Takrai Mine, Khost Colliery, Khost P. O., Sibi, Baluchistan.	North-Western Railway.	Bilar, (*m.*), 30, *Coolie.*	Coal .	He and two others were riding on an empty tub which was being hauled up, when deceased, wishing to see how far they were from the entrance, raised his head which came in contact with a roof bar. He sustained a fracture of the skull which caused his death. Inspection and inquiry made.
104	10th September, 10 A.M.	Banakuri Mine, Chowkidanga P. O., Burdwan, Bengal.	South Kenda Coal Co.	Sonritha Bauri, (*f.*), 17, *Coolie.*	Coal .	She attempted to jump on to a moving train of tubs, but slipped and fell on the rail. Two of the tubs ran over her and fractured an arm. She died a month later from blood poisoning. Inspection and inquiry made.
105	7th October, 5 P.M.	Damudapur Mine, Nandi P. O., Burdwan, Bengal.	Bengal Coal Co., Ld.	Mangali Majhain, (*f.*), 35, *Coal-filler.*	Coal .	She was knocked over and killed by a full tub which ran amain. Inspection and inquiry made.
106	8th October, 11 A.M.	Bhutgoria Mine, Jharia P. O., Manbhum, Bengal.	Aldih Coal Co., Ld.	Bajedas Panika, (*m.*), 40, *Miner.*	Coal .	Two front tubs out of a journey of three ran wild down an incline before being coupled to the third tub and ran over Bajedas and killed him. *See Report, page 14.* Inspection and inquiry made.
107	21st October, 5 P.M.	Chinchuria Mine, Asansol P. O., Burdwan, Bengal.	Baraboni Coal Concern, Ld.	Nomi Muchin, (*f.*), 45, Niti Muchin (*f.*), 30, Bhuji Muchin, (*f.*), 60, *Bailing kamins.*	Coal .	Whilst descending an incline, with only one lighted lamp, nine persons were met by an ascending train of tubs and in the confusion which followed four of them were seriously injured, three of whom subsequently died. Inspection and inquiry made.
108	19th November, 9-30 A.M.	Sendra Mine, Sijua P. O., Manbhum, Bengal.	Sendra Coal Co., Ld.	Bhut Nath Dutt, (*m.*), 25, *Pit sircar.*	Coal .	He was riding on the front tub of a full journey, which was being hauled up, when he fell off and one or two tubs went over his leg. He died on the 22nd November after amputation of the leg. Inspection and inquiry made.
109	12th December, 6-30 P.M.	Mudidih Mine, Sijua P. O., Manbhum, Bengal.	Reliance Coal Co., Ld.	Dhunu Singh, (*m.*), 25, *Miner.*	Coal .	As a journey of three tubs was being brought up a surface incline the frame of the front tub to which the rope was directly attached broke, and the tubs ran back into the mine injuring two men, one of whom, Dhunu, died subsequently under operation. Inspection and inquiry made.

APPENDIX I—*contd.*

Fatal Accidents, 1908—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			HAULAGE—*concld.*			
110	28th December, 3-45 P.M.	Sudamdih Mine, Bhujudih P. O., Manbhum, Bengal.	Empire Coal Co., Ld.	Behari Mahato, (*m.*), 18, *Coal-carrier.*	Coal	As a journey of six full tubs was reaching the top of the brow the drawbar of the third tub from the front broke, and the four tubs ran back wild into the mine, killing deceased who was standing at the mouth of a level. *See Report, page 14.* Inspection and inquiry made.
			BY UNDERGROUND MACHINERY (*2 deaths*).			
111	5th February, 4-30 P.M.	Baraboni Mine, Asansol P. O., Burdwan, Bengal.	New Beerbhum Coal Co., Ld.	Amrit Passi, (*m.*), 24, *Underground hookman.*	Coal	He was adjusting some rope which had got loosened from the engine drum when he was caught by the legs and carried over the drum. His leg was subsequently amputated, but he died two days later. Inspection and inquiry made.
112	23rd June, 5-25 P.M.	Panchgatchia Mine, Sitarampur P. O., Burdwan, Bengal.	Lutchipur Coal Co., Ld.	Shadhu, (*m.*), 38, *Coolie.*	Coal	Whilst pinching a trolley upon which was a steam pump, along planks laid to facilitate transit, the wheels slipped and overturned the pump which fell on him and killed him instantly. Inspection and inquiry made.
			SUNDRIES UNDERGROUND—(*3 deaths*).			
113	27th February, 3 to 4 P.M.	Borrea Mine, Sitarampur P. O., Burdwan, Bengal.	New Beerbhum Coal Co., Ld.	Somi Majhain, (*f.*), 40, *Coal-carrier.*	Coal	She was pushing an empty tub when a runaway tub from an adjacent incline struck her tub and knocked her down causing severe injuries from the effects of which she died a few hours after. Inspection and inquiry made.
114	3rd March, 1 P.M.	Gansadih Mine, Kusunda P. O., Manbhum, Bengal.	Prosanna Kumar Roy.	Nanku Roy, (*m.*), 32, *Coal-carrier.*	Coal	A piece of coal weighing about 3 cwts. fell and struck a prop 2′ 9″ away, the latter heeled over and struck deceased on his head injuring him so seriously that he died within an hour. Inspection and inquiry made.
115	7th May, 9-30 P.M.	Bhuggutdih Mine, Dhanbaid P. O., Manbhum, Bengal.	Bengal Nagpur Coal Co., Ld.	Ramjan Meah, (*m.*), 50, *Pump khalassi.*	Coal	The deceased was run over by two empty tubs which ran wild whilst being brought down a haulage incline by two miners without the rope. He was injured so severely that he died next morning. Inspection and inquiry made.
			ABOVE GROUND.			
			By surface machinery—(*1 death*).			
116	19th May, 4-30 A.M.	Serampur Mine, Giridih P. O., Hazaribagh, Bengal.	East Indian Railway Co.	Lallit Gope, (*m.*), 50, *Truckman.*	Coal	The deceased and three or four others were turning the handle of a crab winch, when a sudden jerk took place, and the handle was whirled out of the men's hands. The flying handle struck him in the face injuring him so severely that he died a few hours later. Inspection and inquiry made.

APPENDIX I—*contd.*

Fatal Accidents, 1908—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			ABOVE GROUND—*contd.*			
			On surface railways and tramways belonging to the mine—(*6 deaths*).			
117	23rd January, 1-30 P.M.	Bhuggutdih Mine, Dhanbaid P. O., Manbhum, Bengal.	Bengal Nagpur Coal Co.	Doyal Bauri, (*m.*), 50, *Engineman.*	Coal	The main line gave way and in attempting to shift the engine it capsized on him, injuring him so seriously that he died later on.
118	27th February, 9 P.M.	Mohpani Mine, Mohpani P. O., Narsinghpur, Central Provinces.	Great Indian Peninsular Railway Co.	Myaram, (*m.*), 35, *Surface stone tipper.*	Coal	He tripped and fell while assisting the shunters to move a wagon and was hurt so seriously that he died two days later. Inspection and inquiry made.
119	6th April, 3 P.M.	Katras Mine, Katrasgarh P. O., Manbhum, Bengal.	Nowagarh Coal Co., Ld.	Lillia Bhuia, (*f.*), 35, *Wagon-loader.*	Coal	She was crossing the tramway between the loading wharf and a set of coal ovens and did not observe a locomotive approaching, and was run over by it. She was deaf of one ear. Inspection and inquiry made.
120	22nd August, 6 P.M.	Chikla Mine, Kamptee P. O., Nagpur, Centfal Provinces.	Central Provinces Prospecting Syndicate, Ld.	Kasu, (*f.*) 50, *Coolie.*	Manganese	She was leaving work and while walking between the tram lines was knocked down by a loaded tub, and so seriously injured that she died about a quarter of an hour later. Inspection and inquiry made.
121	26th September, 1-15 P.M.	Chinchuria Mine, Asansol P. O., Burdwan, Bengal.	Baraboni Coal Concern, Ld.	Beja Baurini, (*f.*), 40, *Surface kamin.*	Coal	The deceased was overtaken by a loaded tub while trespassing on a tram line and was so seriously injured that she died four hours later from the effects. Inspection and inquiry made.
122	27th November, 11-30 A.M.	Kurhurbari Mine, Giridih P. O., Hazaribagh, Bengal.	East Indian Railway Co.	Bhatni Ghatwarin, (*f.*), 40, *Boiler kamin.*	Coal	She was carrying ashes over the railway line while shunting was in progress and was caught between two colliding wagons and crushed so badly that she died three days later. Inspection and inquiry made.
			Miscellaneous on surface (*13 deaths*).			
123	4th January, 8-45 P.M.	Bhuggutdih Mine, Dhanbaid P. O., Manbhum, Bengal.	Bengal Nagpur Coal Co.	Tani Kahar, (*m.*), 35, *Bucket-man.*	Coal	The deceased's clothes caught fire while he was sleeping close to a fire on the pit bank, and he was burnt so severely that he died the same day.
124	2nd February, 8-30 P.M.	Serampur Mine, Giridih P. O., Hazaribagh, Bengal.	East Indian Railway Co.	Budhu Dosadh, (*m.*), 25, *Pump khalassi.*	Coal	The deceased was overwound into the head gear while coming up a pit in a bucket owing to the engine khalassi failing to stop the engine in time. The rope came off the head gear pulley and he fell with the bucket to the ground and was so seriously hurt that he died six hours later. *See Report, page 15.* Inspection and inquiry made.
125	21st February, 8 to 9 P.M.	Brahmanbarari Mine, Jharia P. O., Manbhum, Bengal.	East Indian Coal Co., Ld.	Sham Lall Sonar, (*m.*), 25, *Hookman.*	Coal	The deceased went down a path into the shallow part of the quarry to bathe, got out of his depth and was drowned. Inspection and inquiry made.

APPENDIX I—*contd.*

Fatal Accidents, 1908—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			ABOVE GROUND—*contd.*			
			Miscellaneous on surface—*contd.*			
126	14th May, 5-30 P.M.	Murwara Mine, Katni P. O., Jabalpur, Central Provinces.	A. H. Wheeler & Co.	Chuna Chamar, (*m.*), 25, *Coolie.*	Limestone	A block of earth fell on the deceased and on another man while they were cutting it. Chuna was hurt so seriously that he died later.
127	16th June, 9 A.M.	Rajhara Mine, Rajhara P. O., Palamau, Bengal.	Bengal Coal Co., Ld.	Kodo Mala, (*m*), 38, *Surface labourer.*	Coal .	He fell from the top of a mast put up for hoisting and was killed.
128	18th June, 9 P.M.	Bejdih Mine, Sitarampur P. O., Burdwan, Bengal.	Macneill & Co.	Mati Baurini, (*f.*), 50, *Surface kamin.*	Coal .	The shear-legs over a sinking pit fell over while the deceased was at work crushing her so severely that she died three hours later. *See Report, page 15.* Inspection and inquiry made.
129	22nd June, 5 P.M.	Saogi Mine, Kodarma P. O., Hazaribagh, Bengal.	Manoranjan Guha.	Thakuri Gope, (*m.*), 20, *Coolie.*	Mica .	Whilst running to a place of shelter during rain he tripped and fell and fractured his skull.
130	2nd September, 8-30 A.M.	North Kustore Mine, Kusunda P. O., Manbhum, Bengal.	Raniganj Coal Association, Ld.	Nazir Ally Meah, (*m.*), 32, *Tindal coolie.*	Coal .	He fell 30 feet on to the brickwork foundation from a new head frame which was being erected, and injured his head so severely that he died next morning. Inspection and inquiry made.
131	18th September, Morning.	Sanctoria Mine, Dishargarh P. O., Burdwan, Bengal.	Bengal Coal Co., Ld.	Gobinda Kundu, (*m.*), 19, *Chainman.*	Coal .	The deceased was found drowned in an old feed water tank. It is presumed he went to bathe and got out of his depth. Inspection and inquiry made.
132	6th November, 10-45 A.M.	Serampur Mine, Giridih P. O., Hazaribagh, Bengal.	East Indian Railway Co.	Josia Kaharin, (*f.*), 50, *Tramline kamin.*	Coal .	She was run over in attempting to cross the line in front of a tram and died shortly after admission into hospital. Inspection and inquiry made.
133	19th November, 12 to 3 A.M.	Mohpani Mine, Mohpani P. O., Narsinghpur, Central Provinces.	Great Indian Peninsula Railway Co.	Shum Shere, (*m.*), 20, *Stone-tipper.*	Coal .	He and two others lighted a fire and laid down to sleep beside it. Whilst asleep his clothes caught fire and he was burnt so severely that he died a few hours later.
134	21st November, 1 A.M.	North Kustore Mine, Kusunda P. O., Manbhum, Bengal.	Raniganj Coal Association, Ld.	Bastom Bauri, (*m.*), 13, *Shale-picker.*	Coal .	His legs were run over by wagons which were being shunted at the siding whilst he was asleep. He died on the 22nd November. Inspection and inquiry made.
135	19th December, 6 A.M.	Bhaga Mine, Jharia P. O., Manbhum, Bengal.	Jharia Colliery Co., Ld.	Lolit Napit, (*m.*), 20, *Coolie.*	Coal .	His clothes caught fire while he was asleep near a coal fire and was burnt so severely that he died from the effects a few days later.

APPENDIX I—*contd.*

Fatal Accidents, 1908—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Reason for exclusion.	Cause of accident and remarks.
				DEATHS NOT INCLUDED IN THE STATISTICS—(*27 deaths.*)			
1	18th January, 12 Noon.	Kacharwohi Mine, Kamptee P. O., Nagpur, Central Provinces.	Jessop & Co., Ld.	Jutia, (*m.*), 2.	Manganese.	Not employed.	Burnt to death with the hut in which he lived.
2	29th February, 3 P. M.	Sundarchak Mine, Sundarchak P. O., Burdwan, Bengal.	Shampur Coal Co., Ld.	Somi Majhain, (*f.*), 30.	Coal .	Not employed.	The deceased was standing on the ledge of an abandoned quarry partly filled with water, getting ghuting kankar, when she fell back into the water and was drowned. Inspection and inquiry made.
3	7th March, 5 P. M.	Bhulanbarari Mine, Jharia P. O., Manbhum, Bengal.	Bhulanbarari Coal Co., Ld.	Ramprosad Mullat, (*m.*), 7.	Coal .	Not employed.	The child was sitting near its parents who were removing a side of overburden when a mass of it collapsed. The gang escaped but the child was buried. It was dead when taken out. *See Report, page 15.* Inspection and inquiry made.
4	23rd March, 7-30 A. M.	Sonalabad Mine, Jharia P. O., Manbhum, Bengal.	Ghanasham Das Agarwala.	Rohini Kora, (*m.*), 5.	Coal .	Not employed.	Found drowned in a cement water tank. Inspection and inquiry made.
5	13th April, 7 P.M.	Bhatdih Mine, Mohoda P. O., Manbhum, Bengal.	Bengal Bhatdih Coal Co., Ld.	Khargul Khan, (*m.*), 30, *Sinker.*	Coal .	Death due to natural causes.	Deceased went down about 3 or 4 hours after firing and shortly afterwards came up complaining of the fumes. He was a confirmed "ganja" smoker and his death was probably due to natural causes accelerated by "ganja" smoking. Inspection and inquiry made.
6	22nd April, 11 A.M.	Loyabad Mine, Kusunda P. O., Manbhum, Bengal.	Barakar Coal Co., Ld.	Sibua, (*f.*), 10.	Coal .	Not employed.	She was bathing with her brother, a child of 4, and sat upon a large log of wood which was floating in the tank and overbalanced herself and was drowned. Inspection and inquiry made.
7	24th April, 3 P.M.	Kulustore Mine, Chowkidanga P. O., Burdwan, Bengal.	Kulustore Coal Co., Ld.	Suvankar Ghatack, (*m.*), 21, *Store-keeper.* Bhusan Gope, (*m.*), 16, *Coolie.*	Coal .	Not a mine accident.	A hut used as a temporary store caught fire and the two deceased who were presumably asleep inside were so severely burnt that they died the following day. Inspection and inquiry made.
8	2nd May, 3 P.M.	Fatka Mine, Nirshachati P. O., Manbhum, Bengal.	Fatka Coal Co.	Unknown (*m.*), 24.	Coal .	Not employed.	The deceased committed suicide by jumping down a shaft 46 feet deep. The shaft was properly fenced. Inspection and inquiry made.
9	24th May, 3·30 P.M.	Jharia Khas Mine, Jharia P. O., Manbhum, Bengal.	Standard Coal Co., Ld.	Somi Korani, (*f.*), 25.	Coal .	Not employed.	While sheltering during a storm behind an empty wagon, another wagon set in motion by the wind and unperceived by her ran over her and injured her so seriously that she died two days later.
10	27th June, 2 P.M.	Bankola Mine, Raniganj P. O., Burdwan, Bengal.	Eastern Coal Co., Ld.	Rasul, (*f.*), 5.	Coal .	Not employed.	She was sitting under a coal wagon and was run over during hand shunting operations. Inspection and inquiry made.

APPENDIX I—*contd.*

Fatal Accidents, 1908—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Reason for exclusion.	Cause of accident and remarks.
			DEATHS NOT INCLUDED IN THE STATISTICS—*contd.*				
11	29th June, between 10 P.M. and 6 A.M.	Bagdiggi Mine, Jharia P. O., Manbhum, Bengal.	C. J. Smith.	Madhai Barhai, (*m.*), 24.	Coal .	Not employed.	He was found drowned in an iron tank which was entirely closed in except for a hole at the top 1′ 2″ in diameter. Apparently committed suicide. Inspection and inquiry made.
12	3rd July, 9 A.M.	Futtehpur Mine, Jharia P. O., Manbhum, Bengal.	Premji and Devshi Hamir.	Dukhai Mulla, (*f.*), 12, *Earth-carrier.*	Coal .	Death due to epilepsy.	The deceased was seized with an epileptic fit and rolled down a 50 feet slope of earthwork into water and was drowned. Inspection and inquiry made.
13	16th July, 5 P.M.	Jairamdanga Mine, Asansol P. O., Burdwan, Bengal.	New Beerbhum Coal Co., Ld.	Dipni Korini, (*f.*), 8.	Coal .	Not employed.	She went to bathe in a fenced boiler-tank against orders, and was drowned. Inspection and inquiry made.
14	21st July, 1 P.M.	Mayo Mine, Khewra P. O., Jhelum, Panjab.	Government of India.	Mira, (*m.*), 4½.	Salt .	Not employed.	While the parents were attending to the carriage of salt the child moved away unnoticed and fell over the end of the working to a working place below.
15	21st July, 5 P.M.	Loyabad Mine, Kusunda P. O., Manbhum, Bengal.	Barakar Coal Coal Co., Ld.	Rosul, (*f.*), 8.	Coal .	Not employed.	Knocked down by some empty tubs which were being pushed by a locomotive. Died two hours later. Inspection and inquiry made.
16	17th July, 2-30 P.M.	Kabulayatkatti Mine, Kabulayatkatti P. O., Dharwar, Bombay.	Dharwar Reefs Gold Mining Co., Ld.	Anthony, (*m.*), ? *Private-servant.*	Gold .	Not employed on the mine.	Whilst he was bathing near a tank, he slipped in and was drowned.
17	23rd July, 10 A.M.	Bagdiggi Mine, Jharia P. O., Manbhum, Bengal.	C. J. Smith.	Karno Beldar, (*m.*), 55.	Coal .	Not employed.	He went to the steep side of the quarry which was full of water to bathe and presumably fell from the steps into deep water and was drowned. Inspection and inquiry made.
18	5th September, 8 A.M.	Surataur Mine, Nowagarh P. O., Manbhum, Bengal.	Bireswar Roy.	Miton Singh, (*m.*), 40.	Coal .	Not employed.	He was of unsound mind and was found at the bottom of a pit, 90 feet deep, dead. Inspection and inquiry made.
19	27th September, 10 A.M.	Kally Than Surataur Mine, Jharia P. O., Manbhum, Bengal.	K. B. Seal.	Budhni Majhain, (*f.*), 14.	Coal .	Not employed.	She went to bathe in the incline and somehow got out of her depth and was drowned. Inspection and inquiry made.
20	28th September, 12 Noon.	Dheriajoba Mine, Kusunda P. O., Manbhum, Bengal.	Dheriajoba Coal Co.	Sukri Nunia, (*f.*), 5.	Coal .	Not employed.	The child went to a tank which had about 3½ feet of water in it, to wash some utensils and was found drowned in it. Inspection and inquiry made.
21	10th October, 3 P.M.	Jamadoba Mine, Jharia P. O., Manbhum, Bengal.	Indian Collieries Syndicate, Ld.	Kuloda Baurini, (*f.*), 20, *Coal-carrier.*	Coal .	Not a mine accident.	She went to draw water from a well near the miners' huts and probably stood on the wall which was round it and fell down into the well and was drowned. Inspection and inquiry made.
22	20th October, 10-15 A.M.	Sendra Mine, Sijua P. O., Manbhum, Bengal.	Sendra Coal Co., Ld.	Bulki Korani, (*f.*), 30, *Surface labourer.*	Coal .	Not a mine accident.	She was sent upon the roof of a bungalow to clean it and slipped while walking on the parapet. She died shortly afterwards from internal injuries. Inspection and inquiry made.

APPENDIX I—*concld.*

Fatal Accidents, 1908—*concld.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Reason for exclusion.	Cause of accident and remarks.
DEATHS NOT INCLUDED IN THE STATISTICS—*concld.*							
23	22nd November, 3-30 P.M.	Jairamdanga Mine, Asansol P. O., Burdwan, Bengal.	New Beerbhum Coal Co., Ld.	Ganea Bhuia, (*f.*), 7.	Coal .	Not employed.	She was sitting on the return wheel of a main and tail haulage system when the wheel moved and her legs became jammed in the frame. She died on the following day. Inspection and inquiry made.
24	22nd December, 12 Noon.	Bansdeopur Mine, Kusunda P. O., Manbhum, Bengal.	Bansdeopur Coal Co.	Sahadeo Monda, (*m.*), 3.	Coal .	Not employed.	The child was sleeping on a ledge, and a large fall took place about 20 feet away. The child fell down 3 feet and was picked up dead. He had been ill for some days. *See Report, page 15.* Inspection and inquiry made.
25	29th December, 7 P.M.	Kusunda Mine, Kusunda P. O., Manbhum, Bengal.	K. M Selected Coal Co.	Gaoria, (*f.*), 25, Bangalia, (*m*), 3.	Coal .	Not employed.	Found drowned. Probably a case of suicide. Inspection and inquiry made.

APPENDIX II.

Table No. 1.

Indian Mines Act, 1901, Numbers of Mines and workers, year 1908.

Province.	District and Mineral field.	Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Average number of persons employed daily in and about the mines.								Grand Total below ground and above ground.
							Below ground.				Above ground.				
			Worked by steam.	Not worked by steam.	Once.	Twice or more.	Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
A.—COAL.															
Bengal	Hazaribagh, Giridih	10	7	3	3	3	3,325	1,297	27	4,649	1,916	975	75	2,966	7,615
	Manbhum { Jharia	222	94	128	44	38	21,643	15,760	747	38,150	14,022	7,208	1,439	22,669	60.819
	Manbhum { Raniganj	59	11	48	20	15	3,352	1,506	10	4,868	1,477	900	57	2,434	7,302
	Bankura, "	1	...	1	...	...	17	14	...	31	4	8	...	12	43
	Burdwan, "	158	132	26	92	33	15,886	6,590	233	22,709	7,591	4,589	332	12,512	35,221
	Sonthal Parganas, Raniganj.	1	1	...	...	...	14	5	..	19	4	2	...	6	25
	Sonthal Parganas, Rajmahal.	4	...	4	...	...	14	4	...	18	...	...	...	...	18
	Palamau, Daltonganj	2	2	...	...	...	333	212	94	639	376	90	35	501	1,140
	Birbhum Raniganj	1	...	1	...	...	15	10	...	25	9	2	...	11	36
	TOTAL	458	247	211	159	89	44,599	25,398	1,111	71,108	25,399	13,774	1,938	41,111	112,219
Central Provinces.	Chhindwara, Pench Valley.	6	5	1	6	...	591	261	1	853	255	84	25	364	1,217
	Narsinghpur, Mohpani.	1	1	...	...	1	553	228	...	781	397	49	...	446	1,227
	Chanda, Ballarpur	1	1	...	...	1	329	...	...	329	121	...	6	127	456
	TOTAL	8	7	1	6	2	1,473	489	1	1,963	773	133	31	937	2,900
Panjab	Jhelum	17	2	15	2	...	867	...	2	869	584	...	12	596	1,465
	Shahpur	4	...	4	...	...	366	...	...	366	303	...	...	303	669
	Mianwali	4	...	4	...	...	32	...	...	32	27	2	1	30	62
	TOTAL	25	2	23	2	...	1,265	...	2	1,267	914	2	13	929	2,196
Eastern Bengal and Assam.	Lakhimpur	5	5	...	...	...	795	317	...	1,112	366	207	24	597	1,709
	Sibsagar, Dikhu Valley	...	...	...	...	...	...	...	...	..	...	...	...	...	...
	TOTAL	5	5	...	...	...	795	317	...	1,112	366	207	24	597	1,709
Baluchistan	Sibi, Khost	1	1	...	...	1	475	...	...	475	246	...	18	264	739
	Quetta, Sor Range	7	...	7	2	...	143	...	...	143	26	...	...	26	169
	Kalat, Mach and Digari	4	...	4	2	...	119	...	2	121	31	...	1	32	153
	Loralai, Loralai	1	...	1	...	...	5	...	...	5	3	...	...	3	8
	TOTAL	13	1	12	4	1	742	...	2	744	306	...	19	325	1,069
N.-W. Frontier Province.	Hazara	1	...	1	...	...	14	...	...	14	...	...	...	...	14
	GRAND TOTAL (COAL).	510	262	248	171	92	48,888	26,204	1,116	76,208	27,758	14,116	2,025	43,899	120,107
B.—MICA.															
Bengal	Monghyr	4	...	4	...	...	215	19	...	234	107	188	5	300	534
	Hazaribagh	262	...	262	12	...	3,651	978	154	4,783	1,081	1,201	1,252	3,534	8,317
	Gaya	24	...	24	...	...	574	313	59	946	200	177	113	490	1,436
	TOTAL	290	...	290	12	...	4,440	1,310	213	5,963	1,388	1,566	1,370	4,324	10,287
Madras	Nellore	102	4	98	71	1	1,554	1,075	109	2,738	461	715	747	1,923	4,661
	Nilgiris	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	102	4	98	71	1	1,554	1,075	109	2,738	461	715	747	1,923	4,661
Rajputana	Ajmer-Merwara	7	...	7	...	...	72	4	...	76	144	99	10	253	329
	GRAND TOTAL (MICA).	399	4	395	83	1	6,066	2,389	322	8,777	1,993	2,380	2,127	6,500	15,277

APPENDIX II—*contd.*

Table No. I.—*contd.*

Indian Mines Act, 1901, Numbers of Mines and workers, year 1908.

Province.	District and Mineral field.	Number of mines under the scope of the Act.	Number of mines: Worked by steam.	Number of mines: Not worked by steam.	Number of mines inspected during the year: Once.	Number of mines inspected during the year: Twice or more.	Average number of persons employed daily in and about the mines: Below ground: Adult males.	Below ground: Adult females.	Below ground: Children (under 12).	Below ground: Total below ground.	Above ground: Adult males.	Above ground: Adult females.	Above ground: Children (under 12).	Above ground: Total above ground.	Grand Total below ground and above ground.
						C.—MANGANESE.									
Central Provinces.	Nagpur	17	6	11	9	...	1,781	948	44	2,773	246	197	...	443	3,216
	Bhandara	8	5	3	3	...	308	201	4	513	1,108	549	...	1,657	2,170
	Balaghat	11	...	11	1	1	1,119	793	45	1,957	431	279	37	747	2,704
	Chhindwara	3	...	3	3	...	225	241	...	466	270	316	...	586	1,052
	TOTAL	39	11	28	16	1	3,433	2,183	93	5,709	2,055	1,341	37	3,433	9,142
Madras	Vizagapatam	30	2	28	...	...	2,722	1,652	56	4,430	979	732	123	1,834	6,264
Bombay	Panch Mahals	3	...	3	...	1	347	139	46	532	308	143	27	478	1,010
	GRAND TOTAL (MANGANESE).	72	13	59	16	2	6,502	3,974	195	10,671	3,342	2,216	187	5,745	16,416
						D.—LIMESTONE.									
Central Provinces.	Jabalpur, Katni	29	...	29	29	...	835	1,493	30	2,358	391	408	38	837	3,195
Panjab	Hoshiarpur	1	...	1	...	...	40	...	...	40	50	...	...	50	90
	GRAND TOTAL (LIMESTONE).	30	...	30	29	...	875	1,493	30	2,398	441	408	38	887	3,285
						E.—SALT.									
Panjab	Shahpur	1	...	1	...	...	26	24	...	50	...	...	...	...	50
	Jhelum	2	...	2	1	...	316	277	44	637	56	...	...	56	693
	Mianwali	1	...	1	...	1	64	...	...	64	...	...	...	...	64
	GRAND TOTAL (SALT).	4	...	4	1	1	406	301	44	751	56	...	...	56	807
						F.—GEMS.									
Burma	Mogok (RUBIES, ETC.)	1	1	...	...	...	95	...	...	95	1,045	...	...	1,045	1,140
						G.—SLATE.									
Bengal	Monghyr	1	...	1	...	...	95	27	...	122	98	43	...	141	263
Panjab	Gurgaon	6	...	6	6	...	106	43	42	191	340	20	58	418	609
	GRAND TOTAL (SLATE).	7	...	7	6	...	201	70	42	313	58	63	58	559	872
						H.—GOLD.									
Bombay	Dharwar	8	7	1	6	2	1,732	...	...	1,732	743	137	93	973	2,705
Madras	Anantapur	3	3	...	...	...	258	...	...	258	169	29	...	198	456
	GRAND TOTAL (GOLD).	11	10	1	6	2	1,990	...	...	1,990	912	166	93	1,171	3,161

APPENDIX II—*contd.*

Table No. I—*concld.*

Indian Mines Act, 1901, Numbers of Mines and workers, year 1908.

Province.	District and Mineral field.	Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Average number of persons employed daily in and about the mines.								Grand Total below ground and above ground.
							Below ground.				Above ground.				
			Worked by steam.	Not worked by steam.	Once.	Twice or more.	Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
							I.—IRON ORE.								
Central Provinces.	Jabalpur	1	...	1	...	...	12	10	...	22	6	4	...	10	32
Bengal	Singhbhum	4	...	4	...	...	...	...	...	...	231	435	...	666	666
	GRAND TOTAL (Iron Ore).	**5**	**...**	**5**	**...**	**...**	**12**	**10**	**...**	**22**	**237**	**439**	**...**	**676**	**698**
							J.—MAGNESITE.								
Madras	Salem	1	...	1	...	...	164	134	140	438	29	44	44	117	555
							K.—CHROMITE.								
Baluchistan	Quetta-Peshin	1	...	1	...	...	22	...	...	22	25	...	...	25	47
							L.—COPPER.								
Central Provinces.	Jabalpur	4	...	4	...	...	59	...	...	59	20	38	...	58	117
Bengal	Singhbum	1	1	...	...	...	146	...	...	146	55	21	...	76	222
	GRAND TOTAL. (Copper.)	**5**	**1**	**4**	**...**	**...**	**205**	**...**	**...**	**205**	**75**	**59**	**...**	**134**	**339**
							M.—JADE.								
Burma	Myitkyina	3	...	3	...	...	426	...	...	426	959	...	...	959	1,385
							N.—LEAD.								
Bengal	Sambalpur	1	...	1	...	...	6	...	...	6	2	8	...	10	16
							O.—TIN.								
Burma	Mergui	6	...	6	...	...	10	...	...	10	7	...	...	7	17
							P.—STEATITE.								
Central Provinces.	Jabalpur	4	...	4	...	...	66	...	...	66	21	31	...	52	118
							Q.—BAUXITE.								
Central Provinces.	Jabalpur	2	...	2	...	...	48	5	...	53	...	8	...	8	61
	GRAND TOTAL (ALL MINES).	**1,062**	**291**	**771**	**312**	**98**	**65,982**	**34,580**	**1,889**	**102,451**	**37,340**	**19,938**	**4,572**	**61,850**	**164,301**

ERRATA.

On page 43, Appendix II, Table No. 2, under "A.-Coal", Column 4-"Total output", against figures for Manbhum, Raniganj-for 662,222 read 651,654,
and „ Burdwan, „ - „ 3,550,365 „ 3,560,933.

APPENDIX II—*contd.*

Table No. 2.

Classified Statement of Fatal and Serious Accidents in and about Mines regulated by the Indian Act, 1901, during the year 1908.

Province.	District and Mineral field.	Total average number of persons employed daily.	Total output.	Number of separate fatal accidents.	Number of deaths.			Number of serious non-fatal accidents.	Number of persons seriously injured.			Death-rate per 1,000 persons employed.		
					Below ground.	Above ground.	Total deaths.		Below ground.	Above ground	Total number of persons injured.	Below ground.	Above ground.	Below ground and above ground.
				A.—COAL										
			Tons.											
Bengal	Hazaribagh, Giridih	7,615	782,763	7	5	4	9	6	4	2	6	1·07	1·34	1·18
	Manbhum, Jharia	60,819	6,458,643	48	62	7	69	41	26	15	41	1·62	·30	1·13
	,, Raniganj	7,302	662,222	4	5	...	5	2	2	...	2	1·02	...	·68
	Bankura, ,,	43	5,506	...	...	...	...	...	...	...	...	...	...	...
	Burdwan, ,,	35,221	3,550,365	34	38	3	41	28	21	8	29	1·67	·23	1·16
	Sonthal Parganas, Raniganj	25	2,588	...	...	...	...	...	...	...	...	...	...	...
	,, Rajmahal	18	333	...	...	...	...	...	...	...	...	...	...	...
	Palamau, Daltonganj	1,140	96,391	1	...	1	1	3	2	1	3	...	1·99	·87
	Birbhum, Raniganj	36	1,100	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	112,219	11,559,911	94	110	15	125	80	55	26	81	1·54	·36	1·11
Central Provinces	Chhindwara, Pench Valley	1,217	120,249	1	1	...	1	2	1	1	2	1·17	...	·82
	Narsinghpur, Mohpani	1,227	48,241	2	...	2	2	3	3	...	3	...	4·48	1·63
	Chanda, Ballarpur	456	45,299	...	...	...	...	1	1	...	1	...	...	...
	TOTAL	2,900	213,789	3	1	2	3	6	5	1	6	·50	2·13	1·03
Panjab	Jhelum	1,465	41,407	1	1	...	1	8	6	2	8	1·15	...	·68
	Shahpur	669	12,685	...	...	...	...	...	...	...	...	...	...	...
	Mianwali	62	702	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	2,196	54,794	1	1	...	1	8	6	2	8	·78	...	·45
Eastern Bengal and Assam.	Lakhimpur	1,709	275,224	10	11	...	11	1	1	...	1	9·89	...	6·43
	Sibsagar, Dikhu Valley	...	...	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	1,709	275,224	10	11	...	11	1	1	...	1	9·89	...	6·43
Baluchistan	Sibi, Khost	739	31,547	6	25	...	25	1	1	...	1	52·63	...	33·82
	Quetta, Sor Range	169	7,614	...	...	...	...	...	...	...	...	...	...	...
	Kalat, Mach and Digari	153	5,835	...	...	...	...	...	...	...	...	...	...	...
	Loralai, Loralai	8	216	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	1,069	45,212	6	25	...	25	1	1	...	1	33·60	...	23·38
N.-W. Frontier Province	Hazara	14	90	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (COAL)	120,107	12,149,020	114	148	17	165	96	68	29	97	1·94	·38	1·37
				B.—MICA.										
			Cwt.											
Bengal	Monghyr	534	641	...	...	...	...	...	...	...	...	...	...	...
	Hazaribagh	8,317	24,333	2	2	1	3	4	7	...	7	·41	·28	·36
	Gaya	1,436	6,163	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	10,287	31,137	2	2	1	3	4	7	...	7	·33	·23	·29
Madras	Nellore	4,661	11,129	...	...	...	...	1	2	...	2	...	...	...
	Nilgiris	...	...	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	4,661	11,129	...	...	...	...	1	2	...	2	...	..	...
Rajputana	Ajmer-Merwara	329	3,942	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (MICA)	15,277	46,208	2	2	1	3	5	9	...	9	·22	·15	·19

APPENDIX II—*contd.*

Table No. 2—*contd.*

Classified Statement of Fatal and Serious Accidents in and about Mines regulated by the Indian Act, 1901, during the year 1908—*contd.*

Province.	District and Mineral field.	Total average number of persons employed daily.	Total output.	Number of separate fatal accidents.	Number of deaths. Below ground.	Above ground.	Total deaths.	Number of serious non-fatal accidents.	Number of persons seriously injured. Below ground.	Above ground.	Total number of persons injured.	Death-rate per 1,000 persons employed. Below ground.	Above ground.	Below ground and above ground.
			C.—MANGANESE.											
			Tons.											
Central Provinces	Nagpur	3,216	119,656	4	3	1	4	4	1	3	4	1·08	2·25	1·24
	Bhandara	2,170	94,220	...	...	...	...	2	2	1	3	...	...	...
	Balaghat	2,704	122,175	...	...	...	...	3	1	2	3	...	...	...
	Chhindwara	1,052	47,147	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	9,142	383,198	4	3	1	4	9	4	6	10	·52	·29	·43
Madras	Vizagapatam	6,264	89,712	1	1	...	1	1	...	1	1	·22	...	·15
Bombay	Panch Mahals	1,010	22,032	...	...	...	...	1	2	...	2	...	...	...
	GRAND TOTAL (MANGANESE)	**16,416**	**494,942**	**5**	**4**	**1**	**5**	**11**	**6**	**7**	**13**	**·37**	**·17**	**·30**
			D.—LIMESTONE.											
Central Provinces	Jabalpur, Katni	3,195	100,169	3	8	1	9	1	1	...	1	3·39	1·19	2·81
Panjab	Hoshiarpur	90	1,400	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (LIMESTONE)	**3,285**	**101,569**	**3**	**8**	**1**	**9**	**1**	**1**	...	**1**	**3·33**	**1·12**	**2·73**
			E.—SALT.											
Panjab	Shahpur	50	6,464	...	...	..	...	...	...	...	...	...	...	...
	Jhelum	693	76,649	...	...	...	...	5	5	...	5	...	...	...
	Mianwali	64	10,666	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (SALT)	**807**	**93,779**	**...**	**...**	**...**	**...**	**5**	**5**	**...**	**5**	**...**	**...**	**...**
			F.—GEMS.											
Burma	Mogok (Rubies, etc.)	1,140	Carats. 211,194	2	2	...	2	...	...	...	...	21·05	...	1·75
			G.—SLATE.											
Bengal	Monghyr	263	Tons. 1,047	...	...	...	...	...	...	...	...	...	...	...
Panjab	Gurgaon	609	6,374	1	1	...	1	...	...	...	...	5·23	...	1·64
	GRAND TOTAL (SLATE)	**872**	**7,421**	**1**	**1**	**...**	**1**	...	...	...	...	**3·19**	...	**1·14**
			H.—GOLD.											
Bombay	Dharwar	2,705	Ounces. 7,242	7	8	...	8	10	10	...	10	4·61	...	2·95
Madras	Anantapur	456	...	...	...	...	...	2	3	1	4	...	...	...
	GRAND TOTAL (GOLD)	**3,161**	**7,242**	**7**	**8**	**...**	**8**	**12**	**13**	**1**	**14**	**4·02**	**...**	**2·53**

APPENDIX II—*contd.*

Table 2—*concld.*

Classified Statement of Fatal and Serious Accidents in and about Mines regulated by the Indian Act, 1901, during the year 1908—*contd.*

Province.	District and Mineral field.	Total average number of persons employed daily.	Total output.	Number of separate fatal accidents.	Number of deaths. Below ground.	Number of deaths. Above ground.	Number of deaths. Total deaths.	Number of serious non-fatal accidents.	Number of persons seriously injured. Below ground.	Number of persons seriously injured. Above ground.	Number of persons seriously injured. Total number of persons injured.	Death-rate per 1,000 persons employed. Below ground.	Death-rate per 1,000 persons employed. Above ground.	Death-rate per 1,000 persons employed. Below and above ground.
			I.—IRON ORE.											
Central Provinces	Jabalpur	32	Tons. 300	...	...	...	...	...	...	...	...	...	...	...
Bengal	Singhbhum	666	18,907	...	...	...	...	....	...	...	...	...	...	...
	GRAND TOTAL (Iron Ore)	698	19,207	...	...	...	...	...	...	...	...	...	...	...
			J.—MAGNESITE.											
Madras	Salem	555	7,534	...	...	...	...	...	...	...	...	...	...	...
			K.—CHROMITE.											
Baluchistan	Quetta-Pishin	47	Cwts. 20,000	1	1	...	1	...	...	...	...	45·45	...	21·27
			L.—COPPER.											
Central Provinces	Jabalpur	117	Tons. 10	...	...	...	...	1	1	...	1	...	...	...
Bengal	Singhbhum	222	...	1	1	...	1	...	...	...	...	6·84	...	4·50
	GRAND TOTAL (Copper)	339	10	1	1	...	1	1	1	...	1	4·87	...	2·94
			M.—JADE.											
Burma	Myitkyina	1,385	Cwts. 3,367	...	...	...	...	...	...	...	...	...	...	...
			N.—LEAD.											
Bengal	Sambalpur	16	...	...	...	...	...	...	...	...	...	...	...	...
			O.—TIN.											
Burma	Mergui	17	Cwts. 141	...	...	...	...	...	...	...	...	...	...	...
			P.—STEATITE.											
Central Provinces	Jabalpur	118	15,280	...	...	...	...	...	...	...	...	...	...	...
			Q.—BAUXITE.											
Central Provinces	Jabalpur	61	Tons. 32	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (All minerals)	164,301	Tons. 12,873,514 Cwts. 84,996 Ounces. 7,242 Carats. 211,194	136	175	20	195	131	103	37	140	1·70	·32	1·18

APPENDIX II—*contd.*

Table No. 3.

The following table is a summary of the average number of persons working daily in and about mines regulated by the Indian Mines Act, 1901, during the year 1908.

Province.	Average number of persons working daily in and about mines getting						
	Coal.	Mica.	Manganese.	Limestone.	Salt.	Other minerals.	Total persons.
Bengal	112,219	10,287	...	...	...	1,167	123,673
Central Provinces	2,900	...	9,142	3,195	...	328	15,565
Madras	...	4,661	6,264	...	...	1,011	11,936
Eastern Bengal and Assam	1,709	..	...	...	...	...	1,709
Baluchistan	1,069	...	...	...	...	47	1,116
Panjab	2,196	...	...	90	807	609	3,702
Burma	...	...	...	...	...	2,542	2,542
Bombay	...	...	1,010	...	...	2,705	3,715
Rajputana	...	329	...	..	...	...	329
North-West Frontier Province	14	...	...	...	...	...	14
Total 1908	120,107	15,277	16,416	3,285	807	8,409	164,301
Total in preceding year.	102,689	17,983	18,751	3,053	930	8,577	151,983
Difference	+17,418	—2,706	—2,335	+232	—123	—168	+12,318

Table No. 4.

Quantity of Mineral raised.

The following short summary shows the output of the principal minerals from mines regulated by the Indian Mines Act, 1901, for the year 1908.

Province.	Coal.	Manganese Ore.	Mica.	Limestone.	Salt.
	Statute Tons.	Statute Tons.	Statute Cwts.	Statute Tons.	Statute Tons.
Bengal	11,559,911	...	31,137	...	...
Central Provinces	213,789	383,198	...	100,169	...
Madras	..	89,712	11,129	...	...
Eastern Bengal and Assam	275,224	...	...	...	...
Baluchistan	45,212	...	...	...	...
Panjab	54,794	...	...	1,400	93,779
Rajputana	...	...	3,942	...	...
Bombay	...	22,032	...	...	...
North-West Frontier Province	90	...	...	...	...
Total in 1908	12,149,020	494,942	46,208	101,569	93,779
Total in preceding year	10,526,468	642,082	44,919	73,222	101,703
Difference	+1,622,552	—147,140	+1,289	+28,347	—7,924

APPENDIX II– *contd.*

Table No. 5.

The following table shows the average number of persons working daily in and about mines regulated by the Indian Mines Act, during the years 1907 and 1908.

ALL MINES UNDER THE ACT.

Description of workers.	Year 1907.	Year 1908.	Difference.
	Below ground.	Below ground.	Below ground.
Adult Males	64,095	65,982	+1,887
Adult Females	32,850	34,580	+1,730
Children under 12	1,879	1,889	+10
TOTAL BELOW GROUND	98,824	102,451	+3,627
	Above ground.	Above ground.	Above ground.
Adult Males	32,674	37,340	+4,666
Adult Females	16,266	19,938	+3,672
Children under 12	4,219	4,572	+353
TOTAL ABOVE GROUND	53,159	61,850	+8,691
TOTAL BELOW AND ABOVE GROUND	151,983	164,301	+12,318

ALL COAL-MINES UNDER THE ACT.

Description of workers.	Year 1907.	Year 1908.	Difference.
	Below ground.	Below ground.	Below ground.
Adult Males	42,856	48,888	+6,032
Adult Females	22,323	26,204	+3,881
Children under 12	861	1,116	+255
TOTAL BELOW GROUND	66,040	76,208	+10,168
	Above ground.	Above ground.	Above ground.
Adult Males	23,411	27,758	+4,347
Adult Females	11,666	14,116	+2,450
Children under 12	1,572	2,025	+453
TOTAL ABOVE GROUND	36,649	43,899	+7,250
TOTAL BELOW AND ABOVE GROUND	102,689	120,107	+17,418

Table No. 6.

The following table shows the fluctuations in the output of the principal minerals raised from mines classed under the Indian Mines Act, 1901. The other minerals raised are gems, slate, gold, iron ore, magnesite, chromite, copper, jade, tin, steatite, and bauxite.

Year.	Coal.	Manganese Ore.	Mica.	Limestone.	Salt.
	Tons.	Tons.	Cwts.	Tons.	Tons.
1899	4,622,242	87,126	10,860	1,177	78,754
1900	5,452,408	92,458	18,820	...	79,996
1901	6,251,522	162,057	19,900	28,000	90,242
1902	6,790,507	144,037	21,360	30,091	87,361
1903	6,812,725	171,223	20,100	35,238	90,667
1904	7,561,838	138,733	21,320	50,847	107,413
1905	7,770,471	204,194	25,548	93,170	94,078
1906	9,112,663	436,442	50,438	48,836	118,023
1907	10,526,468	642,082	44,919	73,222	101,703
1908	12,149,020	494,942	46,208	101,569	93,779

APPENDIX II—*contd.*

Table No. 7.

The following table shows the amount of coal raised, the average number of persons working daily and the death-rates during the years 1899 to 1908 in respect of coal mines under the Indian Mines Act, 1901.

Year.	Amount of coal raised.	Average number of persons working daily below and above ground.	Number of deaths below and above ground.	Death-rates.	
				Per 1,000,000 tons raised.	Per 1,000 persons working daily below and above ground.
1899 . . .	4,622,242	65,795	73	15·79	1·11
1900 . . .	5,452,408	80,003	52	9·53	·64
1901 . . .	6,251,522	85,361	58	9·28	·67
1902 . . .	6,790,507	89,503	59	8·69	·66
1903 . . .	6,812,725	79,561	67	9·83	·84
1904 . . .	7,561,338	82,002	55	7·27	·67
1905 . . .	7,770,471	79,506	58	7·46	·72
1906 . . .	9,112,663	90,159	80	8·78	·89
1907 . . .	10,526,468	102,689	89	8·45	·86
1908 . . .	12,149,020	120,107	165	13·58	1·37

Table No. 8.

Statement showing the output of coal, the number of persons employed and the number of tons of coal raised per person employed in and about the coal mines of the principal coal-producing countries of the world.

Year.	Countries.	Tons of coal raised.	Persons employed.	Tons raised per person employed.
1907	United Kingdom . . .	267,830,962	925,097	290
1906	United States	381,858,021	640,780	596
„	Germany	196,698,722	569,745	345
„	Austria	38,255,847	121,179	316
„	France	34,004,338	178,431	191
„	Belgium	23,954,848	139,394	172
„	Nova Scotia	5,866,605	12,123	484
„	British Columbia . . .	1,899,076	4,805	395
„	Australia	8,596,416	17,263	498
„	Natal	1,238,713	6,059	204
„	Transvaal	2,582,504	9,445	272
„	Japan	13,192,119	106,589	124
„	New Zealand	1,729,536	3,692	468
1903	Russia	17,581,324	105,774	166
	Totals and average . .	995,289,031	2,840,376	350
1908	**British India . . . .**	**12,149,020**	**120,107**	**101**

APPENDIX II—*contd.*

Table No. 9.

Fatal accidents and deaths in mines regulated by the Indian Mines Act, 1901, during the year 1908, classified according to the mineral worked.

Mineral.	Province and Mineral Area.	Number of separate fatal accidents.	Number of Deaths. Below ground. Adult males.	Below ground. Adult females.	Below ground. Children (under 12).	Below ground. Total.	Above ground. Adult males.	Above ground. Adult females.	Above ground. Children (under 12).	Above ground. Total.	Total below and above ground.
Coal	Baluchistan	6	25	...	...	25	...	...	...	...	25
	Bengal — Daltonganj	1	...	...	...	...	1	...	...	1	1
	Bengal — Giridih	7	3	2	...	5	2	2	..	4	9
	Bengal — Jharia	47	46	15	...	61	6	1	...	7	68
	Bengal — Raniganj	38	29	14	...	43	1	2	...	3	46
	Total (Bengal)	93	78	31	...	109	10	5	...	15	124
	Central Provinces	3	1	...	...	1	2	...	...	2	3
	Eastern Bengal and Assam	10	8	3	...	11	...	...	...	...	11
	Panjab	1	1	...	...	1	...	...	...	...	1
	Total Coal	113	113	34	...	147	12	5	...	17	164
Mica	Bengal	2	2	...	...	2	1	...	...	1	3
Manganese	Central Provinces	4	2	1	...	3	...	1	...	1	4
	Madras	1	1	...	...	1	...	...	...	...	1
	Total Manganese	5	3	1	...	4	...	1	...	1	5
Limestone	Central Provinces	3	8	...	...	8	1	...	...	1	9
Gems	Burma	2	2	...	...	2	..	...	...	...	2
Slate	Panjab	1	1	...	...	1	...	...	...	...	1
Gold	Bombay	7	8	...	...	8	...	...	...	...	8
Chromite	Baluchistan	1	1	...	...	1	...	...	...	...	1
Copper	Bengal	1	1	...	...	1	...	...	...	...	1
Grand total, all minerals		135	139	35	...	174	14	6	...	20	194

APPENDIX II—*contd.*

Table No. 10.

Fatal accidents and deaths classified according to causes.

Causes of Accidents.	1908.				
	Number of separate accidents.	Deaths.			
		Adult males.	Adult females.	Children (under 12).	Total.
BELOW GROUND.					
Explosions of fire-damp	3	22	...	...	22
Falls in Mines.					
Falls of roof	38	46	11	...	57
„ „ side	20	23	8	...	31
Total	58	69	19	...	88
In Shafts.					
Ropes and chains breaking	1	1	...	...	1
Whilst ascending or descending by machinery	4	4	5	...	9
Falling into the shaft from the surface	6	6	...	...	6
Falling from part of the way down	5	4	1	...	5
Things falling from the surface	3	3	...	...	3
Miscellaneous	3	3	...	...	3
Total	22	21	6	...	27
Miscellaneous below ground.					
By explosives	6	8	...	...	8
Irruptions of water or falling into water	2	1	1	...	2
Haulage	19	14	8	...	22
By underground machinery	2	2	...	...	2
Sundries underground	3	2	1	...	3
Total	32	27	10	...	37
Total below ground	115	139	35	...	174
ABOVE GROUND.					
By surface machinery	1	1	...	...	1
On surface railways and tramways	6	2	4	...	6
Miscellaneous on surface	13	11	2	...	13
Total above ground	20	14	6	...	20
Total below and above ground	135	153	41	...	194

APPENDIX II—*contd.*

Table No. II.

ACCIDENTS, 1908.

Classified according to cause and mineral worked.

MINERAL WORKED.	Number of separate fatal accidents.	NUMBER OF PERSONS KILLED.											DEATH-RATE PER 1,000 PERSONS EMPLOYED.		
		Explosions of fire-damp.	Falls of roof.	Falls of side.	In shafts.	Explosives.	Suffocation by gases.	Irruptions of water or falling into water.	Haulage.	Miscellaneous below ground.	Surface.	Total deaths.	Below ground.	Above ground.	Below and above ground.
Coal . . .	113	22	55	16	22	3	...	2	22	5	17	164	1·94	·38	1·37
Mica . . .	2	...	...	2	...	...	...	...	...	...	1	3	·22	·15	·19
Manganese . .	5	...	...	3	...	1	...	...	...	...	1	5	·37	17	·30
Limestone . .	3	...	...	8	...	...	...	...	...	...	1	9	3·33	1·12	2·73
Gems . . .	2	...	...	1	1	...	...	...	...	...	...	2	21·05	...	1·75
Slate . . .	1	...	...	1	...	...	...	...	...	...	...	1	3·19	...	1·14
Gold . . .	7	...	2	...	3	3	...	...	...	...	...	8	4·02	...	2·53
Chromite . .	1	...	...	...	...	1	...	...	...	...	...	1	45·45	...	21·27
Copper . .	1	...	...	...	1	...	...	...	...	...	...	1	4·87	...	2·94
Total 1908 .	135	22	57	31	27	8	...	2	22	5	20	194	1·70	·32	1·18
Total preceding year.	105	5	29	28	21	11	2	4	10	3	9	122	1·14	·16	·80
Difference . .	30	17	28	3	6	−3	−2	−2	12	2	11	72	·56	·16	·38

Table No. 12.

Statement of Prosecutions instituted under the Indian Mines Act (VIII of 1901) during the year ending 31st December 1908.

PROVINCE.	District.	Number of prosecutions.	Number of persons prosecuted.	Number convicted.	REMARKS.

APPENDIX II—*contd.*

Table No. 13.

Number of Inspections by District and other Officers, 1908.

District and Mineral area.	Number of Mines Inspected.		
	Once		More than twice.
COAL.			
Bengal—			
Burdwan, Palamau, Daltonganj, Bankura, Raniganj	4	...	...
	2	...	...
	1	...	...
Manbhum, Raniganj	...	...	1
		...	1
Panjab	3	...	...
Eastern Bengal and Assam—Lakhimpur	5	...	...
Baluchistan	2	6	...
TOTAL AT COAL MINES	17		
MICA.			
Madras—Nellore	1	1	
MANGANESE.			
Central Provinces, Chhindwara	2	...	...
Bombay—Panch Mahals		...	...
TOTAL AT MANGANESE MINES		...	...
LIMESTONE.			
Central Provinces	3	...	1
SALT.			
Panjab, Jhelum	1	...	...
JADE.			
Burma, Myitkyina	3	...	...
GRAND TOTAL	28	7	3

APPENDIX II—*contd.*

Table No. 14.

Mines opened and closed during the year ending 31st December 1908.

Province.	District.	Number of mines opened.	Number of mines closed.
	A.—COAL.		
Bengal	Hazaribagh-Giridih	2	2
	Manbhum, Jharia	32	6
	,, Raniganj	14	4
	Burdwan ,,	25	2
	Bankura ,,	1	...
Total		74	14
Panjab	Mianwali	1	2
	Jhelum	6	7
	Shahpur	1	...
Total		8	9
Central Provinces	Chhindwara	3	...
Baluchistan	Quetta	2	...
Total (Coal)		87	23
	B.—MICA.		
Bengal	Hazaribagh	25	88
Madras	Nellore	7	12
Rajputana	Ajmer-Merwara	...	4
Total (Mica)	.....	32	104

APPENDIX II—*concld.*

Table No. 14—*concld.*

Province.	District.	Number of mines opened.	Number of mines closed.
	C.—MANGANESE ORE.		
Madras	Vizagapatam	3	31
Central Provinces	Nagpur	...	2
	Balaghat	...	2
Total		...	4
Total (Manganese)		3	35
	D.—LIMESTONE.		
Central Provinces	Jabalpur	3	3
	E.—SLATE.		
Bengal	Monghyr	...	1
	F.—GOLD.		
Madras	Anantapur	2	...
Bombay	Dharwar	...	3
Total (Gold)		2	3
	G.—IRON.		
Bengal	Singhbhum	1	...
Central Provinces	Jabalpur	1	1
Total (Iron)		2	1
	H.—CHROMITE.		
Baluchistan	Quetta-Pishin	...	1
	I.—COPPER.		
Central Provinces	Jabalpur	1	1
Bengal	Singhbhum	1	2
Total (Copper)		2	3
	K.—JADE.		
Burma	Myitkyina	1	3
	L.—STEATITE.		
Central Provinces	Jabalpur	3	2

APPENDIX III.

Table No. 1.

Inspections and enquiries made under Section 5 of the Land Acquisition (Mines) Act, 1885, during the year ending 31st December 1908.

Registered number.	Name of mine and description of land acquired.	Name of the owner of the mine.	Date of gazetted declaration.	Name of Inspector making the enquiry.
1	Sitalpur Coal Mine— Sanctoria Branch line of the Bengal Nagpur Railway.	Bengal Coal Co., Ld. .	.....	G. C. Leach.
4	Benahir Coal Mine — Surataur siding of the East Indian Railway (14A Seam).	Standard Coal Co., Ld. .	13th July 1908 . .	G. F. Adams.
31	Loyabad Coal Mine— Loyabad siding of the East Indian Railway (No. 14 Seam).	Barakar Coal Co., Ld. .	11th July 1908 . .	Ditto.
32	Tetturia Coal Mine— Tetturia North siding and the Jumoni Branch of the East Indian Railway.	New Tetturia Coal Co., Ld.	10th August 1908 .	Ditto.
44	Kankani Coal Mine— Kankani assisted siding of the East Indian Railway.	Eastern Coal Co., Ld. .	5th August 1908 .	Ditto.
87	Kendwadih Coal Mine— Jamadoba Branch of the Bengal Nagpur Railway and assisted sidings.	Hariladih Coal Co., Ld.	.....	Ditto.
89	Encroachment on land acquired for the Jinagora Branch of the East Indian Railway.	Gova Petha & Co., and the East Barari Coal Co.	7th September 1908 .	Ditto.
91	Lutchipur Coal Mine— Borachak-Sodepur Branch of the East Indian Railway.	Lutchipur Coal Co., Ld.	.....	Jas. Grundy.
94	Ekra Khas Coal Mine— Loyabad siding of the East Indian Railway	Maharaja Manindra Chandra Nandi.	.....	G. F. Adams.
95	Simlabahal Coal Mine— Main line and Simlabahal siding of the Bengal Nagpur Railway.	Bhalgora Coal Co., Ld. .	6th June 1908 . .	Ditto.
97	Loyabad Coal Mine— New Loyabad siding, Dhanbaid-Katrasgarh Branch of the East Indian Railway.	Barakar Coal Co., Ld. .	9th February 1909 .	Ditto.
99	Tentulia Coal Mine— Katras-Khanudih extension of the East Indian Railway.	Tentulia Colliery Co. .	20th July 1908 . .	Ditto.
101	Sendra Coal Mine— Kankani and Sendra sidings of the East Indian Railway.	Sendra Coal Co., Ld. .	17th August 1908 .	Ditto.
103	West Gopalichak Coal Mine— Extension of the Kurkend siding on the Damuda Branch of the East Indian Railway (No. 14 Seam).	Gopalichak Coal Co., Ld.	29th August 1908 .	Ditto.

APPENDIX III—*contd.*

Table No. 1—*concld.*

Inspections and enquiries made under Section 5 of the Land Acquisition (Mines) Act, 1885, during the year ending 31st December 1908—*contd.*

Registered number.	Name of mine and description of land acquired.	Name of the owner of the mine.	Date of gazetted declaration.	Name of Inspector making the enquiry.
104	Chowrasi Coal Mine— Chowrasi Branch and sidings of the Bengal Nagpur Railway.	Equitable Coal Co., Ld.	.....	J. R. R. Wilson.
105	Kusunda Coal Mine— Kusunda siding, Damuda Branch of the East Indian Railway (Nos. 11 and 12 Seams).	K. M. Selected Coal Co.	31st August 1908	G. F. Adams.
103	Loyabad Coal Mine— Midnapur-Jharia extension of the Bengal Nagpur Railway.	Barakar Coal Co., Ld.	10th November 1908	Ditto.
107	Khas Jharia Coal Mine— Bhalgora and Khas Jharia sidings of the East Indian Railway.	Khas Jharia Colliery Co., Ld.	2nd October 1908	J. R. R. Wilson.
109	Haripur Coal Mine— Haripur assisted siding of the East Indian Railway.	Baraboni Coal Concern, Ld.	31st December 1908	R. R. Simpson.
110	Sarthakpur Coal Mine— Toposi and Ikra Junction of the East Indian Railway.	Sudamdih Coal Co., Ld.	.....	Ditto.
112	Chora Coal Mine— Haripur assisted siding of the East Indian Railway.	Ondal Coal Co., Ld.	.....	Ditto.
114	Madhuband Coal Mine— Katras-Khanudih extension of the Jharia Branch of the East Indian Railway.	Jumoni Coal Co., Ld.	4th February 1909	G. F. Adams.
115	Bhatdih Coal Mine— Mohoda-Murulidih Branch of the Bengal Nagpur Railway.	Bengal Bhatdih Coal Co., Ld.	15th February 1909	Ditto.
116	Joyrampur Coal Mine— Jinagora siding, Jharia-Pathurdih line of the East Indian Railway.	Trikamji Jivandass & Co.	.....	Ditto.
117	Joyrampur Coal Mine— Jinagora Branch of the East Indian Railway.	Ghela Panchan & Co.	.....	Ditto.
120	Joyrampur Coal Mine— Jinagora Branch of the East Indian Railway.	Khengarji Triku	.....	Ditto.
123	Jamuria Coal Mine— Toposi to Baraboni relieving line and sidings of the East Indian Railway.	Equitable Coal Co., Ld.	.....	G. C. Leach.

APPENDIX III—*contd.*

Table No. 2.

Inspections and enquiries made under Section 11 of the Land Acquisition (Mines) Act, 1885, during the year ending 31st December 1908.

Registered number.	Name of mine and description of land acquired.	Name of the owner of the mine.	Date of declaration.	Name of Inspector making the enquiry.
3	Phularibad Coal Mine— Surataur joint assisted siding of the East Indian Railway.	Khas Jharia Coal Co.	.....	G. F. Adams.
12	Kusunda and Nyadi Coal Mine— Kustore siding and the Damuda Branch of the East Indian Railway.	Kusunda and Nyadi Collieries, Ld.	.....	Ditto.
40	Mouzra Coal Mine— Ondal Loop, Toposi Branch of the East Indian Railway.	Basanti Oakdene Coal Co.	.....	R. R. Simpson.
49	Kusunda and Nyadi Coal Mine— Alkusa siding of the East Indian Railway (No. 13 Seam).	Kusunda and Nyadi Collieries, Ld.	.....	G. F. Adams.
58	Gopinathpur Coal Mine— Land acquired for the East Indian Railway at Mugma Station.	Mugma Coal Association.	.....	G. C. Leach.
65	Busserya Coal Mine— Bansdebpur siding of the East Indian Railway.	Busserya Coal Co., Ld.	.....	G. F. Adams.
70	Bhowra Coal Mine— Bhowra Branch, Jharia connection line of the Bengal Nagpur Railway.	Eastern Coal Co., Ld.	.....	Ditto.
88	Ekra Khas Coal Mine— Ekra Khas siding of the East Indian Railway.	Maharaja Manindra Chandra Nandi.	.....	Ditto.
90	South Baraboni Coal Mine— Ikra Branch of the East Indian Railway	South Baraboni Coal Co.	25th April 1908	R. R. Simpson.
92	Hariladih Coal Mine— Boiler Inspector's and District Board's bungalows at Bhaga.	Standard Coal Co., Ld.	13th June 1908	G. F. Adams.
93	Bamundiha Coal Mine— Sodepur Branch of the East Indian Railway.	Damuda Coal Co., Ld.	9th October 1908	Jas. Grundy.
96	Chinchuria Coal Mine— Sitarampur-Ikra Branch of the East Indian Railway.	Baraboni Coal Concern, Ld.	.....	Ditto
108	Kadmogora Coal Mine— Surataur siding of the East Indian Railway.	P. C. Roy	.....	G. F. Adams.
111	Gangutia Coal Mine— Sanctoria Branch of the Bengal Nagpur Railway.	Bengal Nagpur Coal Co., Ld.	.....	G. C. Leach.

APPENDIX III—*contd.*

Table No. 3.

List of plans of abandoned and discontinued mines received during the year 1908.

Registered number.	Name and situation of mine.	Name and number of seam.	Name of mineral worked.	Name of owner.	Date of abandonment or discontinuance.
36	Warora Coal Mine, Warora, C. P.	Nos. 2 and 3 Seams	Coal.	Government of the Central Provinces.	April 1906.
37	Lutchipur Coal Mine, Sitarampur, P. O.	Raghunathbatty Seam.	Coal.	Lutchipur Coal Co., Ld.	3rd October 1907.
38	Portion of Begunia, Khas Colliery, Barakar, E. I. R.	Begunia Seam	Coal.	Maharaja M. C. Nandi.	8th September 1907.
39	Charanpur Coal Mine, Charanpur, Asansol.	Poniata, Sibpur or Jairamdanga Seam.	Coal.	Apcar & Co.	April 1907.

Table No. 4.

SIBPUR COLLEGE.

THE MINING CLASSES.

Circular.

THESE classes are attached to the Overseer Section of the Apprentice Department.

General explanation.—The Mining Classes are designed to afford theoretical training in the principles of mining generally, to prepare students for positions of responsibility in coal or metal mines, and, in the case of students attending for instruction in coal mining, to qualify them to appear for the examinations of mine managers, as required by the Indian Mines Act, VIII of 1901.

The course at Sibpur for regular mining students will extend over four years. At the end of the second year the Sub-Overseer Examination is held. The specialised instruction in mining at Sibpur is given in the third and fourth years of the college course, according to the attached syllabus, and the diploma examination takes place at the end of the fourth year.

The classes are open to both regular students and special students.

Regular students—Are those who have qualified for admission by passing the Sub-Overseer Examination of the Civil Engineering College, or an equivalent test of other College.

Their age limits are 17 minimum and 19 years maximum on admission.

Special students.—Persons resident in Bengal, who have been employed upon mines, will be admitted as special students under the following conditions :—

(*a*) that they have completed at least two years' practical work upon a mine ; and

(*b*) that they have passed (*i*) the B. Final Examination, (*ii*) the Matriculation or Entrance Examination of any Indian University, or (*iii*) any test equivalent to the Middle School Examination of the Code for European Schools.

There is no limit of age for such special students.

All applications for admission from outside candidates should be posted so as to reach the Principal's office by 1st April.

Regular students should apply in the proper form available from the Principal's office.

Special students must provide, (*a*) proof of educational attainments, and (*b*) a statement showing the nature and extent of their employment upon mines and the period thereof, supported by certificates from the mine managers under whom they have worked.

APPENDIX III—*contd.*

Table No. 4—*contd.*

SCHOLARSHIPS.

For regular students.—Two scholarships of ₹12 monthly and three of ₹6 are provided. These will be awarded on the results of the Sub-Overseer Examination by the Director of Public Instruction on the recommendation of the Principal. Students trained at the Civil Engineering College or any affiliated technical school in Bengal are eligible for these scholarships. If they are on the Reduced fee list they will be charged full tuition fees.

For special students.—Two scholarships of ₹150 monthly for European candidates and two of ₹50 monthly for Indian candidates, each tenable for two years, are offered. These will be awarded annually by the Director of Public Instruction on the recommendation of the Mining Advisory Board.

Application for these scholarships should be made to the Principal of the Civil Engineering College, when applying for admission.

There is no residential accommodation available at the college for special students, scholarship-holders or otherwise: they must make their own arrangement for board and lodging, and must attend the college daily from 8 A.M. A mid-day meal will be supplied, if desired, at the college at a definite monthly charge to be fixed by the Principal.

The session begins each year on, or about, the first Monday in May. The college closes for the long vacation about the first week of August and re-opens about the end of October.

Special students must pass all college test examinations and must appear at the diploma examination held at the end of the course.

The following fees will be charged from special students:—

Caution money deposit.—₹5, which will be returned on leaving the college after deducting any charge-dues owing.

Tuition fee.—₹3 monthly payable for 12 months in the year.

Mid-day meal.—₹10 monthly for Europeans, and ₹5 for Indians.

All fees become due on the 15th of the month.

Regular students, who must be residents, will be charged in full the fees noted in the Rules of the Apprentice Department.

A camp of practical mining and surveying will be held for six weeks in the cold weather of each session in the colliery districts.

SYLLABUS OF MINING COURSES.

COURSE I.

Geology applied to Mining.—(One lecture per week.)

Classification of rocks: characteristic fossils and economic products of the principal systems.

Structure of rocks: foldings, faults, cleavage, formation of mineral veins.

Principles of geological surveying: methods employed in constructing geological maps and sections. Special reference to the Geology of India.

Mining Engineering.—(Two lectures per week).

Boring by hand and power machines.

Sinking and lining shafts; various methods employed in special cases.

Systems of haulage, underground and aboveground, aërial rope-ways.

Hoisting, headgear, ropes, safety appliances.

Mining legislation.

Section A.—(One lecture per week).

Methods of working coal; shaft pillars, preliminary work and various methods of working the seams. Special reference to thick coal working as practised in England and different parts of the world.

Shot-firing; coal-cutting by machinery.

Surface subsidence and under-sea working.

Timbering and other supports.

Coal mine plans and sections, connecting surface and underground surveys.

Section B.—(One lecture per week.)

Prospecting for and methods of working mineral veins.

Alluvial mining and open workings.

Hydraulic mining; dredging for gold; ore-beds and deep leads overhand and underhand stopping.

Hand and power drilling; blasting; timbering.

Metal mine plans.

APPENDIX III—*contd.*

Table No. 4—*concld.*

COURSE II.

Descriptive Mineralogy.—(One lecture per week.)

Physical properties of minerals; description of various ores and fuels; methods of determination.

Prospecting operations.

Mining Engineering.—(Two lectures per week during first-half of session.)

Drainage of mines; adit levels; pumping machinery; dams; boring against old working.

Ventlation of mines; natural and artificial ventilation; splitting and regulation of currents; types of fans; water-gauge and anemometer.

Power-application in a mine; discussion of relative merits of steam, water, compressed-air, electricity, and oil, as sources of applied power.

Section A.—(One lecture per week.)

Description of gases found in coal mines; colliery explosions; safety lamps; instruments for detecting fire-damp; treatment of men overcome by foul air.

Arrangement of surface works at a colliery; sorting and screening coals; coal-washing, briquette making, coking, and bye-products.

Section B.—(One lecture per week.)

Surface works of metal mines, sorting, crushing, sizing, and concentration of various ores. Modern ore-dressing machinery, and slime tables.

Special reference to treatment of gold, silver, copper, lead and zinc.

Cyanide and Chlorine treatment of slimes.

Table No. 5.

MINING INSTRUCTION IN BENGAL.

Preliminary.—The scheme of instruction is designed to afford facilities for persons employed in coal-mines to be trained in the Principles of Mining.

The following centres have been established and Sub-Committees appointed :—

RANIGANJ DISTRICT.

Dishargarh Centre.	*Charanpur Centre.*
Mr. G. C. Leach.	Mr. R. R. Simpson.
„ Wm. Miller.	„ R. Mitchell.
„ G. F. Scott.	„ E. M. Patterson.
„ W. McFarlane.	„ A. Russell.

JHARIA DISTRICT.

Jharia Centre.	*Sijua Centre.*
Mr. G. F. Adams.	Mr. G. F. Adams.
„ J. J. Turnbull.	„ H. C. Veasey.
„ A. Gregory.	„ E. H. Bennertz.
„ A. S. Thomson.	„ W. J. Wood.

The Mining Instructor will visit each centre once a week.

The course of instruction, consisting of about 25 lectures, will commence in November 1908 and continue to the beginning of the rainy season, 1909.

An examination will be held at the end of the course.

A candidate who passes the examination will receive a certificate recording his success. No candidate, however, will be permitted to sit for examination unless he has attended seventy-five per cent. of the lectures.

SYLLABUS OF THE COURSE OF INSTRUCTION.

The course will treat principally of the more practical operations in actual mining, with special reference to India, and the principles underlying such operations will be thoroughly discussed.

Special attention will be paid to the various methods of working thick seams.

APPENDIX III—*contd.*

Table No. 5—*concld.*

PART I.

Geology.—General structure of the crust of the earth: Definitions and descriptions of fault, dyke, outcrop, dip, strike, unconformity, etc.; composition and properties of coal; special reference to the coal measures in India: Importance of recording results of observations.

Exploration.—Advantages of borings; driving through faults, washouts, dykes, etc.; methods of maintaining the direction and gradient of such drivages.

Boring and Winning.—Different systems of boring; choice of methods; cost of boring. Winning coal by inclines, adits, shafts, shafts and crosscut.

Sinking.—Site of colliery; position of shafts, excavation and shape; blasting with use of safety fuse and electric battery; explosives and detonators, their safe storing and handling; lining the shafts and scaffolding; sinking pit banking arrangements, bowks, water-barrels, bull chain and hook, etc. Special difficulties in sinking and how to deal with them.

Opening out and methods of working.—Shafts pillars; arching or supporting the pit bottom; quarrying; pillar and stall; double road stall; long wall.

Thick coal.—Methods of working in South Staffordshire and Warwickshire, in Upper Silesia and France; methods of working thick seams by long wall, by inclined slices, and by horizontal slices, also the Rabatage System.

Timbering and Supporting.—Fixing of props and double timber; chocks or cogs; special methods of timbering to withstand pressure from the roof, sides and floor; securing dangerous holes in the roof due to heavy falls; use of iron or steel girders; stowing and packing; arching.

Gases met with in Coal-mines.—Their experimental preparation by chemicals and illustration of their physical and physiological properties; methods of detecting; explosion and gob fires.

Ventilation.—Natural and artificial methods; coursing the air; use of stoppings, brattices, doors, airbridges, regulators, etc.; measuring the quantity of air, use of thermometer, barometer, water-gauge, anemometer; the friction of air in mines and the elementary theory of splitting.

Safety lamps.—Theory of the safety lamp, Sir Humphrey Davy's Experiment; the Davy lamp, the Clanny and Thomas and Williams lamps, the Marsaut and Mueseler lamps; fire-damp detectors.

PART II.

Mechanical Engineering of Collieries,—Winding engines, discussion of the different types, calculation of the dimensions of cylinders, length of stroke, diameter of drum, etc.; strength of winding ropes and chains, detaching hooks, capping winding ropes, care and examination of ropes.

Pumping.—Importance of a good system; measurement of quantities of water; lifting and forcing pump; pumps for sinking; temporary and permanent pumps: calculation of dimensions of pumps to perform a given duty, etc., strength of pipes, methods of supporting; different types of joints.

Hauling.—Tramways, tubs and wagons; conveyance by self-acting inclines; single-rope haulage; main and tail; endless rope; endless chain; calculations concerning inclines, sizes of haulage engines, ropes, etc.; signalling; capping of haulage ropes.

Surface arrangements.—Boilers; Cornish, Lancashire, and water-tube types; boiler fittings, injectors, and steam pipes, etc.; boiler explosions, incrustation, corrosion, and priming; calculations on boilers; Heap steads: arrangement of roads around pit bank; simple screening and sizing.

Transmission of power by steam, compressed air, and electricity; discussing the relative merits of each system.

Coke.—Its production and composition; different types of ovens; recovery of bye-products.

Table No. 6.

DEPARTMENT OF MINES IN INDIA.

Regulations made by the Board of Examiners under Rule 30 of the rules applying to coal-mines made under Section 20 of the Indian Mines Act, 1901, for the conduct of examinations for managers' certificates of competency.

(1) No member of the Board of Examiners shall act as a local examiner, except in emergent cases.

(2) When possible one or more members of the Board of Examiners shall attend every examination on at least one of the days.

APPENDIX III—*contd.*

Table No. 6—*concld.*

(3) So far as is practicable, the local examiners shall be :—

(*a*) An Inspector of Mines, who shall be Secretary to the local examiners.

(*b*) Two Mining Engineers or Colliery Managers who must be the holders of first class certificates. Provided that a Mining Professor may be appointed instead of one of the Mining Engineers or Managers.

(4) The remuneration of each local examiner shall be ₹150 for each examination, and a capitation fee of ₹2 for each first class candidate and ₹1 for each second class candidate examined, and travelling expenses and halting allowances on the first class scale under Civil Service Regulations ; but an Inspector of Mines, acting as a local examiner, shall not be entitled to any fee or remuneration whatsoever, beyond the travelling expenses and halting allowances due to him in his official capacity.

(5) The subjects for examination shall be :—

(*a*) *Arithmetic and handwriting.*

(*b*) *Practical and theoretical coal-mining*, including surface and underground arrangements, sinking, timbering, ventilation, gases met with in coal mines, a knowledge of plans, surveying and levelling, and of the various instruments used in mining. Questions may also be asked upon geology, sanitation, hydraulics, explosives, safety lamps and similar subjects. The candidates may also be required to show how to arrange the ventilation and haulage of a mine on a given plan.

(*c*) *Practical mechanics*, including steam, steam-engines, steam-boilers, pumps and strength of materials ; and questions may be asked upon electricity and compressed air as applied to coal-mining.

(*d*) *The Indian Mines Act, 1901*, and rules made under the Act.

(6) The examinations shall be both written and oral, and the subjects and conditions shall be the same for candidates for both classes of certificates ; but the examination questions shall be made suitable for each class of certificate.

(7) The following shall be the maximum number of marks given for each subject :—

Subject.	First Class.			Second Class.		
	Papers.	*Viva voce.*	Total.	Papers.	*Viva voce.*	Total.
(*a*) Arithmetic and handwriting	50	...	50	50	...	50
(*b*) Mining	160	60	220	140	80	220
(*c*) Mechanics	110	40	150	100	50	150
(*d*) Indian Mines Act	60	20	80	50	30	80
Total .	380	120	500	340	160	500

(8) No candidate who fails to obtain 66 per cent. of the total number of marks, or 33 per cent. in either of the subjects of Mining or Mechanics, shall be passed by the examiners, and if a candidate fails to obtain 33 per cent. of the marks given for either of the subjects of Arithmetic and Handwriting or the Indian Mines Act, any marks he may have obtained in such subjects shall not be included when the total is determined.

(9) Before each examination each candidate shall declare whether he presents himself for a first or second class certificate. No candidate for a second class certificate shall be eligible at that examination for a first class certificate, but a candidate for a first class certificate, who does not reach the necessary standard, may, nevertheless, at the discretion of the local examiners, be recommended to the Board of Examiners for a second class certificate, if, in their opinion, he has done sufficiently well to deserve it.

(10) The Secretary to the local examiners shall report, by registered post, the result of the examination, giving the number of marks obtained by each candidate in each subject, to the President of the Board of Examiners within one month of the close of the examination.

(11) The questions which the local examiners intend to put in the examination papers shall be submitted in draft to the Board of Examiners, for approval, at least six weeks before the date of the examination.

(12) At least one examination shall be held annually in the Bengal coalfields ; and in other parts of India examinations will be held whenever, in the opinion of the Board of Examiners, the number of candidates in a coal-mining centre justifies the holding of an examination.

APPENDIX *III—contd.*

Table No. 7.

List of holders of certificates as Managers of Coal Mines in British India.

(*a*) Certificates granted to holders of English certificates of competency.

FIRST CLASS.

NAME.	No of Indian certificate.	Date of Indian certificate.	No. of English certificate.	Date of English certificate.
Dundas, Robert Henry	88	5th January 1908	2709	21st December 1905.
Colvin, William	89	Ditto	2983	14th June 1907.
Archdale, Hewan	90	Ditto	2330	13th January 1904.
Fenwick, Ralph (Junior)	91	Ditto	2780	12th June 1906.
Field, Benjamin Starks	92	Ditto	2567	22nd February 1905.
Purdy, Richard	93	17th February 1908.	2242	16th June 1903.
Samson, Thomas	94	Ditto	2469	8th June 1904.
Benson, Frederick Stanley	95	Ditto	2489	26th August 1904.
Howes, Francis Tippett	96	20th April 1908	170	8th July 1889.
Anderson, David A.	97	Ditto	1844	19th June 1901.
Gillespie, Alexander	98	Ditto	2992	14th June 1907.
Parker, Joseph	99	Ditto	1396	11th June 1898.
Brimlow, Percy	100	Ditto	2301	8th January 1904.
Wilson, John Robert Robinson	101	Ditto	1850	27th December 1883.
Brown, James	102	Ditto	1702	19th June 1908.
Gibson, Tom Schofield	103	Ditto	2665	27th June 1905.
Wilson, John	104	7th June 1908	1891	19th June 1901.
Mason, James	105	Ditto	1875	19th June 1901.
Lamont, James	106	Ditto	2999	14th June 1907.
Duffy, Charles	107	Ditto	2755	27th February 1906.
Brown, John	108	Ditto	2977	14th June 1907.
Stafford, Thomas H. (Junior)	109	Ditto	1983	27th February 1902.
Vickers, Percy George	110	Ditto	1767	17th November 1900.
Spence, David	111	Ditto	862	12th January 1895.
Naysmith, Gilbert	112	Ditto	3009	14th June 1907.
Robinson, Frederic Haldyn	113	14th July 1908	1660	23rd February 1903.
Paddon, Neville Blackmore	114	Ditto	2873	17th November 1906.
Williams, Arthur Hamilton	115	Ditto	2972	11th June 1907.
Ritchie, John Malcolm	116	29th July 1908	3015	14th June 1907.
Mackenzie, James Thomson	117	Ditto	2450	8th June 1904.
McMurtrie, Stuart	118	Ditto	1987	9th May 1902.
Kirk, John	119	Ditto	2997	14th June 1907.
Bayne, John Archibald Campbell	120	Ditto	2611	5th June 1905.

APPENDIX III—*contd.*

Table No. 7—*contd.*

List of holders of certificates as Managers of Coal Mines in British India—*contd.*

(*a*) Certificates granted to holders of English certificates of competency.

FIRST CLASS.

NAME.	No. of Indian certificate.	Date of Indian certificate.	No. of English certificate.	Date of English certificate.
Conn, David	121	29th July 1908	2882	31st December 1906.
Hunter, John	122	26th August 1908	2995	14th June 1907.
Allardyce, Archibald	123	Ditto	1928	31st December 1901.
Tarlton, Henry Myles	124	Ditto	2558	10th January 1905.
Greener, William James	125	Ditto	2306	8th January 1904.
Elves, Edward	126	1st December 1908	985	1st October 1895.
Kirkwood, James	127	Ditto	2339	13th January 1904.
Owen, Lewis	128	Ditto	2963	11th June 1907.
Ashley, Theodore	129	Ditto	2911	22nd February 1907.
Fullwood, Joshua Henry	130	Ditto	1802	10th January 1901.
Bullock, Victor	131	Ditto	2286	23rd November 1903.
Mackie, James	132	Ditto	3150	11th June 1908.
Martin, George Stewart	133	Ditto	3153	Ditto.
Greenshields, Thomas Marshall	134	Ditto	2781	12th June 1906.

SECOND CLASS.

Leslie, John Thomas	11	20th April 1908	5768	15th November 1905.
Briggs, William Alexander	12	Ditto	5132	17th February 1904.
Porteous, William	13	7th June 1908	5644	5th June 1905.
Ross, Ralph	14	Ditto	1460	19th February 1892.
Mitchell, George Kellock	15	Ditto	5260	8th June 1904.
Ramsay, Robert Erskine	16	Ditto	5646	5th June 1905.

APPENDIX III—*contd.*

Table No. 7—*contd.*

List of holders of certificates as Managers of Coal Mines in British India—*contd.*

(*b*) Certificates of Service.

FIRST CLASS.

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Seton-Burn, William Frank	125	5th January 1908.	
Mukherji, Joyanta Kumar	126	17th February 1908.	
Chatterji, Nishapati	127	20th April 1908.	
Perkins, George William	128	Ditto.	
Mukherji, Romesh Chandra	129	7th June 1908.	
Mukherji, Mahananda	130	1st December 1908.	
Sarkar, Bidhu Bhusan	131	Ditto.	

SECOND CLASS.

Mukherji, Surendra Nath	161	5th January 1908.	
Chopin, James Cecil	162	Ditto.	
Misra, Mukunda Lal	163	17th February 1908.	
Stanford, William Bryant	164	Ditto.	
Smith, William Spencer Gorham	165	Ditto.	
Sarkar, Rajendra Lal	166	Ditto.	
Banerji, Pashupati	167	Ditto.	
Das, Gonesh (Vig.)	168	20th April 1908.	
Roy, Narendra Nath	169	Ditto.	
Tah, Rakhal Das	170	7th June 1908.	
Sarkar, Sures Chandra	171	Ditto.	
Chatterji, Kashipati	172	Ditto.	
Hazra, Jnanendra Nath	173	Ditto.	
Bhattacharya, Kenaram	174	Ditto.	
Chatterji, Manindra Nath	175	Ditto.	
Mukherji, Bepin Bihari	176	Ditto.	
Roy, Nilkanta	177	14th July 1908.	
Dutta, Manindra Nath	178	29th July 1908	Duplicate granted on 1st December 1908.
Lalla, Ramdin	179	Ditto.	
Marwari, Fulchand	180	Ditto.	
Roy, Kedar Nath	181	1st December 1908.	
Ghosh, Pratap Chandra	182	Ditto.	

APPENDIX III—*contd.*

Table No. 7—*contd.*

List of holders of certificates as Managers of Coal Mines in British India—*contd.*

(c) Certificates of Competency.

FIRST CLASS.

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Rowley, John Thomas	19	5th January 1908.	
Morrison, Thomas	20	Ditto.	
David, Charles John Evan	21	Ditto.	
Willey, Edward	22	Ditto.	
Oliver, James Arthur	23	Ditto.	
Cooper, Frank	24	Ditto.	
Wilkinson, H. Llewellyn	25	Ditto.	
Barnard, William	26	Ditto.	
Munroe, Martin	27	Ditto.	
Howarth, Willis	28	Ditto.	
Rooke, John	29	Ditto.	
Piggford, Henry G.	30	Ditto.	
Cork, Frederick Lawrence (Junior)	31	Ditto.	
Ghatak, Gouri Sanker	32	Ditto.	
Mukherji, Bhupaty	33	Ditto.	
Sarkar, Narendra Nath	34	26th August 1908.	
Mitchell, Andrew Ireland	35	Ditto.	
Adamson, Harry	36	Ditto.	
Das, Romes Chandra	37	Ditto.	
Mitchell, George Kellock	38	Ditto.	
Nash, Ernest George	39	Ditto.	

SECOND CLASS.

Maughan, John Victor	11	5th January 1908.	
Datta, Aswini Kumar	12	Ditto.	
Waddell, William Shand	13	Ditto.	
Tweedie, Charles Hungerford Lane	14	Ditto.	
Kitchen, Hubert	15	Ditto.	
Brown, Jacob	16	Ditto.	
Mukherji, Hari Prafulla	17	Ditto.	
Simpson, Thomas	18	Ditto.	
Chatterji, Pravakar	19	Ditto.	
McInerney, Michael Edward	20	Ditto.	

APPENDIX III—*contd.*

Table No. 7—*concld.*

List of holders of certificates as Managers of Coal Mines in British India—*concld.*

(*c*) Certificates of Competency—*concld.*

SECOND CLASS—*concld.*

NAME	No. of certificate.	Date of certificate.	REMARKS.
Mazumder, Kanderpa Mohan	21	5th January 1908.	
Loving, Osmond Davies	22	Ditto.	
Nash, Ernest George	23	Ditto.	
Sarkar, Narendra Nath	24	Ditto.	
Bullock, James	25	Ditto.	
Bhar, Ananta Ram	26	Ditto.	
Rooke, Reginald George	27	Ditto	Having obtained a certificate in the last examination, this ertificate was withheld.
Mukherji, Tarak Nath	28	26th August 1908.	
Jones, Allan A. Dennis	29	Ditto.	
Malcolm, Robert Wright	30	Ditto.	
Cox, Henry Moncrieff	31	Ditto.	
Lethorn, Frederick Edwards	32	Ditto.	
Ghani, Mahomed Osman	33	Ditto.	
Powell, Trevor Gerald	34	Ditto.	
Dutta, Ashutosh	35	Ditto.	
Dholakia, Jhaverilal Kalyanrai	36	Ditto.	

APPENDIX III—*contd.*

Table No. 8.

List of Universities and Colleges in England and India approved by the Governor-General in Council for the purposes of Rules 32 and 33 of the Indian Mines Act, 1901.

Name of Institution and Degree or Diploma.	Date.
University of Birmingham in respect of its Degree of B.Sc. in Mining and Diploma in Mining.	11th June 1904.
University College of Bristol in respect of its Senior Diploma in Mining.	16th September 1904.
University of Cambridge in respect of its Diploma in Mining Engineering.	6th June 1905.
University of Durham in respect of its Degree of B.Sc. in Mining	21st December 1903.
Durham College of Science in respect of its Diploma in Mining	29th June 1904.
University of Glasgow in respect of its Degree and Diploma in Mining.	28th September 1904.
Glasgow and West of Scotland Technical College in respect of its Diploma in Mining.	28th June 1904.
University of Leeds in respect of its Degree of B.Sc. in Mining and Diploma in Mining.	21st November 1904.
University of London in respect of its B.Sc. Degree in Mining for Internal Students, subject to the Degree being endorsed by the University with a certificate of four months' practical experience in a mine.	9th June 1905.
Royal School of Mines in respect of its Associateship in Mining	24th March 1904.
University of Oxford in respect of its Diploma B. (for Colliery Engineers) in Scientific Engineering and Mining Subjects.	11th February 1905.
University College of Sheffield in respect of its Diploma in Mining.	15th July 1904.
University College of South Wales and Monmouthshire in respect of its Diploma in Mining.	19th April 1904.
Wigan Mining and Technical College in respect of its Diploma in Mining.	26th August 1904.
Civil Engineering College, Sibpur, in respect of its Diploma in Mining.	22nd February 1907.

APPENDIX III—*concld.*

Table No. 9.

List of Inspection Circles.

No. 1 Circle.	No. 2 Circle.	No. 3 Circle.
(*a*) All mines in the districts of Palamau, Gaya, Monghyr, Singhbhum, Darjeeling, Ranchi and Sambalpur, and all mines other than coal mines in the district of Hazaribagh, and all mines in the district of Manbhum, which are situated west of a line drawn from Adra Junction at mile 175 of the Bengal Nagpur Railway to Gobindpur at mile 169 on the Grand Trunk Road and continued across the district in each direction.	(*a*) All mines in the districts of Burdwan and Bankura to the west of a line drawn from mile 131 on the East Indian Railway main line near Asansol to mile 141 on the Ondal loop near Gaurangdi, and continued across the districts in each direction; and all mines in the district of Manbhum east of a line drawn from Adra Junction at mile 175 on the Bengal-Nagpur Railway to Gobindpur at mile 169 on the Grand Trunk Road, and continued in each direction across the district, and all coal mines in the district of Hazaribagh.	(*a*) All mines in the districts of Burdwan and Bankura to the east of a line drawn from mile 131 on the East Indian Railway main line near Asansol to mile 141 on the Ondal loop near Gaurangdi, and continued across the districts in each direction, and all mines in the districts of the Sonthal Parganas and Birbhum.
(*b*) All mines in Assam.	(*b*) All mines in Baluchistan.	(*b*) All mines in the Presidency of Bombay.
(*c*) All mines in Burma.	(*c*) All mines in the United Provinces.	(*c*) All mines in the Central Provinces.
	(*d*) All mines in the Panjab.	(*e*) All mines in the Presidency of Madras.
	(*e*) All mines in Ajmer-Merwara.	

APPENDIX IV.

ADDITIONS TO THE ACT.

No. 9709—181.

GOVERNMENT OF INDIA.

DEPARTMENT OF COMMERCE AND INDUSTRY.

GEOLOGY AND MINERALS.

NOTIFICATION.

Simla, the 23rd October 1908.

In exercise of the power conferred by section 20 of the Indian Mines Act, 1901 (VIII of 1901), the Governor General in Council is pleased to direct that for the Provisos to rules 32 and 33 of the rules regarding Mine Managers' certificates published with Notification No. 2968-82, dated the 21st April 1906, the following shall be substituted, namely :—

Proviso to Rule 32.—Provided that this period shall be reduced to four years, and may, if the Board of Examiners think fit, be further reduced to three years, in the case of a candidate who has receiveda diploma in scientific and mining training after a course of study of at least two years at an educational institution approved in this behalf by the Governor General in Council, or who has taken a degree in scientific and mining subjects at a University approved in this behalf by the Governor General in Council.

Proviso to Rule 33.—Provided that this period shall be reduced to two years, and may, if the Board of Examiners think fit, be further reduced to one year, in the case of a candidate who has received a diploma in scientific and mining training after a course of study of at least two years at an educational institution approved in this behalf by the Governor General in Council, or who has taken a degree in scientific and mining subjects at a University approved in this behalf by the Governor General in Council.

B. ROBERTSON,

Secretary to the Government of India.

No. 9710—9724—131.

A copy is forwarded to the Governments of Madras, Bombay, Bengal, the United Provinces, the Panjab, Burma, Eastern Bengal and Assam, the Hon'ble the Chief Commissioner, Central Provinces, the Chief Commissioner, Coorg, the Chief Commissioner, Ajmer-Merwara, the Hon'ble the Agent to the Governor General and Chief Commissioner, North-West Frontier Province, the Hon'ble the Agent to the Governor General in Baluchistan.

A copy is also forwarded to the Railway Department / Director, Geological Survey of India / Chief Inspector of Mines in India, for information.

By order, etc.,

H. C. GOWAN,

Offg. Under Secretary to the Government of India.

No. 11793—103.

GOVERNMENT OF INDIA.

DEPARTMENT OF COMMERCE AND INDUSTRY.

NOTIFICATION.
GEOLOGY AND MINERALS.

Dated Calcutta, the 30th December 1908.

In exercise of the powers conferred by section 20 of the Indian Mines Act, 1901 (VIII of 1901), the Governor General in Council is pleased to make the following rules for the whole of British India in respect of all mines.

No. 302—95-5, dated 27th January 1904.
No. 3952—36, dated 10th May 1907.
No. 7861—36, dated 19th September 1907.
No. 10014—100, dated 4th December 1907.

The notifications noted on the margin are hereby cancelled.

Annual returns.

1. Forms I, II, III, and IV in the Schedule hereto annexed shall be (1) filled up in duplicate by the agent, or, if there is no agent, by the owner or manager of a mine, and one copy of each shall be forwarded to the Chief Inspector of Mines and the other to the District Magistrate not later than the 1st February (2) in each year.

Notice of abandonment.

2. When a mine, seam or vein has been abandoned for more than one month, or the working thereof discontinued for more than two months, the owner of the mine, seam or vein shall within seven days after the expiry of such period send notice to the Chief Inspector of Mines specifying the name and situation of the mine, the name of the owner and the date and cause of abandonment or discontinuance.

Notice of re-opening.

3. When a mine, seam or vein is re-opened after abandonment or discontinuance, the owner shall send notice to the Chief Inspector of Mines within one month after the date of re-opening.

Change of name of owner, or of mine.

4. When a change occurs in the name of a mine, or of an owner or agent of a mine, notice of the change shall be sent by the owner, agent or manager to the Chief Inspector of Mines within one month after such change.

Notice of extension to vicinity of railway.

5. If the owner, agent or manager of any mine intends to extend any mining operations under his control at or to any point within fifty yards of any railway subject to the provisions of the Indian Railways Act, 1890, he shall give the Chief Inspector of Mines and the Railway Administrations concerned notice in writing of his intention so to do sixty days before the commencement of such extension.

Expiry of notice under rule 5.

6. If the operations in respect of which notice is given under rule 5 are not commenced within twelve months from the expiry of the period of sixty days therein referred to, the notice shall be held to have expired, and a fresh notice shall be given by the owner, agent or manager of the mine, under rule 5.

Particulars to be given in notice under rule 5.

7. The notice to be given under rule 5 shall specify the position of the working of the mine in relation to the railway in question, the manner in which it is proposed to carry out the intended new operations, the limits to which it is proposed to carry the said operations, and whether the operations are actually in progress, and shall include a plan showing the existing and the intended mining operations in so far as they affect the railway in question.

(1) Under section 22 (2) (*b*) of the Indian Mines Act, failure to forward correct returns to the Chief Inspector of Mines not later than 1st February in each year will render the agent, owner or manager liable on conviction to a penalty which may extend to R500.

(2) It will greatly facilitate the preparation of the Statistics if the returns are despatched as soon as possible after the close of the year.

8. When an accident occurs in or about a mine causing loss of life or serious bodily injury, or when an accidental explosion occurs in a mine, the owner, agent or manager of the mine shall within twenty-four hours of the occurrence of such accident, give notice of the accident to the Chief Inspector of Mines by despatching to the Magistrate of the district or to the Sub-divisional Magistrate, for transmission to the Chief Inspector of Mines, a notice in form V in the schedule hereto annexed.

Notice of accident.

Explanation.—An injury is said to be serious which involves or will in all probability involve the loss of or permanent injury to any limb, or to the sight or hearing or fracture of any limb, or enforced absence from work for twenty days, or which is declared by any medical officer to be serious.

9. When any person dies from the result of an injury already reported as serious under rule 8, the owner, agent or manager of the mine shall send notice, within twenty-four hours of his being informed of the death, to the Chief Inspector of Mines, through the Magistrate of the district or the Sub-divisional Magistrate.

Notice of deaths from injuries.

10. From every order passed by the Chief Inspector of Mines under section 6, clause (*d*), an appeal shall lie to the Mining Board, if a Mining Board has been constituted under section 9 of the said Act for the Province or part of the Province where the mine in respect of which the order was made is situate and elsewhere to the Chief Controlling Revenue authority, as defined in section 2, clause (8), of the Indian Stamp Act, 1899 (II of 1899).

Appeals.

THE SCHEDULE.

FORM I.

Year ending on the 31st December 190 .

1. Name of mine.
2. Date of opening.
3. Date of closing (if closed).
4. Means by which mineral is raised from the mines.
5. Situation of Mine } District. Province.
6. Name and postal address of { Owner, Managing Agent, Agent, Manager, Assistant or Under Manager.

FORM II.

(1) *Average number of persons employed daily during the year ending on the 31st December 190 .*

Name or No. of pit, plot or excavation.	BELOW GROUND.				ABOVE GROUND.				Gross total below and above ground.
	Male adults. (2)	Female adults. (2)	Children under 12.	Total.	Male adults. (2)	Female adults. (2)	Children under 12.	Total.	
1	2	3	4	5	6	7	8	9	10
TOTAL .									

(1) Aggregate number of daily attendances (permanent and temporary) divided by the number of working days.

(2) Persons over twelve years of age.

APPENDIX IV—*contd.*

FORM III.

Output of Mineral during the year ending on 31st December 190 .

Name or No. of pit, plot or excavation.	Depth from the surface of the lowest point of the seam or vein worked in feet.	Name of mineral worked.	(1) Total amount of mineral raised. (3)	(2) Total value at the mine of mineral raised. (3)	Number of days worked.	IN CASE OF COAL MINES.			
						Number of coke ovens.	TONS OF COKE PRODUCED.		Kind of ovens.
							In open heaps.	In ovens.	
1	2	3	4	5	6	7	8	9	10
TOTAL .									

(1) Including, in the case of coal mines, coal raised for colliery consumption or made into coke, and stated —
(*a*) in the case of gold—in troy ounces;
(*b*) in the case of gem-stones—in carats;
(*c*) in the case of alum, amber, asbestos, chromite, corundum (not being gem corundum), graphite, jadestone, mica, steatite and tin ore—in cwts., or where the circumstances require greater particularisation in order to give an accurate estimate of small outputs, in cwts. and lbs.;
(*d*) in the case of clays, coal, coke, iron-ore, limestone, magnesite, manganese ore, other unspecified metalliferous ores, salt and slate—in tons.

(2) Actual or estimated wholesale price at pit's mouth, cost of loading, if any, being deducted.
(3) Figures for mica should relate to the quantity and value of marketable mica consigned.

FORM IV.

Accidents and Inspections.

NO. OF SEPARATE ACCIDENTS REPORTED DURING THE YEAR.			NO. OF PERSONS.		No. of prosecutions under the Act, with the section under which the prosecution was instituted.	No. of persons convicted under the Act, with the sections under which the convictions were obtained.	NO. OF INSPECTIONS.		
Fatal.	Serious.	Total.	Killed.	Seriously injured.			By District Officers.	By Mines Inspector.	Total.
1	2	3	4	5	6	7	8*	9*	10*

* It is optional to supply the information required by columns 8, 9 and 10. They will be filled in by the Mines Department when left blank by Mine Agents or Owners.

Signature of Agent, Owner, or Manager. } _____

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APPENDIX IV—*contd.*

FORM V.

Notice of Accident.

FROM—

To—The Chief Inspector of Mines, through the $\frac{\text{District}}{\text{Sub-Divisional}}$—Magistrate of

Dated *190* .

SIR,

I have the honour to furnish the following particulars of a $\frac{\text{fatal}}{\text{serious}}$ accident / an accidental explosion which has occurred at the Mine.

1. Situation of the mine. (Village, Station, District, Province.)	
2. Mineral worked	
3. Name and postal address of owner	

4. Name and sex of persons—		Age.	Occupation.
Killed.	Injured.		

5. Date and hour of accident	
6. Place of accident	
7. Cause and description	
8. Classification of accident (1) ...	
9. Nature of injury, and if fatal, cause of death.	

I have the honour to be,
SIR,
Your most obedient servant,
Owner,
Agent,
Manager.

(1) *Under one or other of the following heads, namely :—*

(1) Explosions of fire damp; (2) falls of roof; (3) falls of sides; (4) in shafts (overwinding); (5) in shafts (ropes and chains breaking); (6) in shafts (whilst ascending or descending by machinery); (7) in shafts (falling into the shafts from the surface); (8) in shafts (falling from part of the way down); (9) in shafts (things falling from the surface); (10) in shafts (things falling from part of the way down); (11) in shafts (miscellaneous); (12) suffocation by gases; (13) by explosives; (14) irruptions of water or falling into water; (15) haulage; (16) by underground machinery; (17) sundries underground; (18) by surface machinery; (19) surface boilers or pipes bursting; (20) on surface railways or tramways belonging to the mine; (21) miscellaneous on surface.

B. ROBERTSON,

Secretary to the Government of India.

APPENDIX IV—*concld.*

No. 11794—11809—103.

Copy forwarded to—

The Secretary to the Government of Madras, Revenue Department.
The Secretary to the Government of Bombay, Revenue Department.
The Chief Secretary to the Government of Bengal.
The Chief Secretary to the Government of the Panjab.
The Revenue Secretary to the Government of Burma.
The Chief Secretary to the Government of Eastern Bengal and Assam.
The Honourable the Chief Commissioner, Central Provinces.
The Chief Commissioner of Coorg.
The Chief Commissioner of Ajmer-Merwara.
The Honourable the Agent to the Governor General and Chief Commissioner, North-West Frontier Province.
The Honourable the Agent to the Governor General in Baluchistan.

A copy is forwarded to the Foreign Department, for information.

A copy is also forwarded to the Finance Department / Chief Inspector of Mines in India / Railway Department / Secretary, Indian Mining Association, for information (in continuation of the endorsement from this Department, No. 8707-8708—103, dated the 17th September 1908).

( ) to Bengal and Chief Inspector of Mines only.

By order, etc.,

M. M. S. GUBBAY,

Under Secretary to the Government of India.

APPENDIX V.

List of Coal Mines worked under the Indian Mines Act, 1901, in British India.

Serial number.	Name of Owner or Company arranged in alphabetical order, and postal address.	Name of Mine and number of separate Mines as defined by Rule 27.	Situation of Mine.	Name of Manager, and No. and Class of his Certificate, Authorization or Permit.	Name of Assistant Manager and No. and Class of his Certificate.	Name and address of Managing Agent.	Date of establishment of Special Rules.	Persons employed: Below ground.	Persons employed: Above ground.	Remarks.
			Bengal-Jharia Coalfield (No. 1 Inspection Circle).							
1	A. B. C. Coal Co.(A.M.Arathoon, T. C. Barker and C.M. Carapiet). (See column No. 7).	Bhatmurna	Bhatmurna, Katrasgarh, E.I.R.	H. Corp	...	A. M. Arathoon, 3, Rawdon Street, Calcutta.	...	3	53	T. C. Barker, Agent.
2		Jamua	Jamua, Katrasgarh, E. I. R.					603	215	
3	Agabeg Bros. (See column No. 7).	Jogta (4 mines).	Jogta, Sijua, E. I. R.	S. McMurtrie, *1st class competency, No. 118, in lieu of English certificate. Authorization, No. 245, to act as manager of more than one mine.*	...	...	...	37	18	
4	Agarwala, Ghansham Dass Jharia P. O.	Sonalabad	Sonalabad	Jnanendra Nath Mukherji, *1st class service, No. 91. Authorization, No. 323, to act as manager of more than one mine.*	...	...	...	62	38	
5	Agarwala, Jagannath Ramjus Jharia P. O.	Khas Jharia	Khas Jharia, Jharia, E. I. R.	Girendra Narain Mukherji, *2nd class service, No. 116.*	...	...	...	13	18	
6		Khas Jharia (New)		Monji Nenji *Permit, No. 187.*	...	...	...	14	18	
7	Agarwala, Lachmi Narayan Jharia P. O.	Godhur (West)	Godhur, Kusunda, E. I. R.	Kazi Kafiluddin Ahmed *Permit, No. 225.*	...	...	...	15	20	
8	Agarwala, Ramjus Jharia P. O.	Chandrabad (2 mines).	Chandrabad, Jharia, E. I. R.	K. N. Bose, *2nd class service, No. 152.*	...	...	...	83	24	
9		Futtehpur	Futtehpur, Jharia, E. I. R.		...	...	...	375	104	
10	Aldih Coal Co., Ld. (See column No. 7).	Bhutgoria	Bhutgoria, Jharia, E. I. R.	F. L. Cork (Jr.), *1st class competency, No. 31. Authorization, No. 285, to act as manager of more than one mine.*	...	MacNeill & Co., 2, Clive Ghat Street, or Post Box No. 15, Calcutta.	...			
11	Angarpatra Coal Co., Ld. (See column No. 7).	Angarpatra	Angarpatra, Katrasgarh, E. I. R.	W. A. Hockly, *1st class service, No. 39*	...	Hoare, Miller & Co., 38, Strand, or Post Box No. 63, Calcutta.	...	630	380	Lately owned by J. N. Bose.
12		Kantapahari	Kantapahari, Katrasgarh, E. I. R.		..		...			Lately owned by Mr. W. A. Hockly.
13		Ramkanali	Ramkanali, Katrasgarh, E.I.R.		...					

14	Angarpatra Colliery Co. (Virgi Akhai & others). Katrasgarh P. O.	Angarpatra . .	Angarpatra, Katrasgarh, E.I.R.	Purshotam Bhimji, *1st class service, No. 65.*	...	...	...	208	36
15		Kantapahari .	Kantapahari, Katrasgarh, E.I.R.						
16	Angarpatra (North) Coal Co. (G. P. Hazra and others). Katrasgarh P. O.	Angarpatra (North)	Kesalpur, Katrasgarh, E. I. R.	Indu Bhusan Bhatta .	...	Kali Charan Dutt & Co., 81, Clive Street, Calcutta.	...	...	...
17	Angarpatra (South) Coal Co. (Bejoy Krishna Banerji & Son) 22, Nayanchand Dutt Street, Calcutta.	Kantapahari .	Kantapahari, Katrasgarh, E.I.R.	J. K. Chowdhuri .	...	...	...	23	15
18	Auckland Coal Co., Ld. . . (See column No. 7).	Nudkhurki (East) .	Nudkhurki	J. Rowley, *1st class competency, No. 19. Authorization, No. 259, to act as manager of more than one mine.*	...	Lyall, Marshall & Co., 25, Mangoe Lane, or Post Box No. 6, Calcutta.	...	245	350
19	Azam, Masihal . . . . Kusunda P. O.	Godhur (Central) .	Godhur, Kusunda, E. I. R. .	Sayed Masudal Haq .	...	...	...	10	14
20	Bagchi, R. N. . . . . Jharia P. O.	Dobari . . (5 mines).	Dobari, Jharia, E. I. R. .	Trivonga Chakravarty, *2nd class service, No. 36. Authorization, No. 136, to act as manager of more than one mine.*	...	...	...	63	79
21	Bagdiggi-Kujama Collieries, Ld. . (See column No. 7).	Bagdiggi . .	Bagdiggi, Jharia, E. I. R. .	Keshab Chandra Sarkar, *2nd class service, No. 25.*	...	M. L. Laik and Banerji, 7, Swallow Lane, or Post Box No. 141, Calcutta.	...	...	...
22		Kujama (South) .	Kujama, Jharia, E. I. R. .	Tarak Nath Mukherji, *2nd class competency, No. 28.*	...		...	130	63
23	Bamongarah Coal Co., Ld. . . (See column No. 7).	Bamongarah .	Bamongarah . . .	R. R. Vogel . . *Permit, No. 223.*	...	Octavius Steel & Co., 14, Old Court House Street, or Post Box No. 55, Calcutta.	...	18	45
24	Banerji & Co., Harish Chandra . Katrasgarh P. O.	Chandore . .	Chandore, Sijua, E. I. R. .	Krishna Chandra Ghosal, *Permit, No. 94.*	...	...	...	22	6
25	Banerji, Bepin Behari . . . Katrasgarh P. O.	Kesalpur (New) .	Kesalpur, Katrasgarh, E. I. R.	Rajendra Nath Biswas, *Permit, No. 128.*	..	...	...	42	10
26	Banerji's Coal Concern, J. L. . (See column No. 7).	Surataur (New) .	Jharia Khas, Jharia, E. I. R. .	Charu Chandra Mukherji, *1st class service, No. 104. Authorization, No. 299, to act as manager of more than one mine.*	...	M. L. Laik and Banerji, 7, Swallow Lane, or Post Box No. 141, Calcutta.	...	113	101

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

Serial number.	Name of Owner or Company arranged in alphabetical order, and postal address.	Name of Mine, and number of separate Mines as defined by Rule 27.	Situation of Mine.	Name of Manager, and No. and Class of his Certificate, Authorization or Permit.	Name of Assistant Manager and No. and Class of his Certificate.	Name and address of Managing Agent.	Date of establishment of Special Rules.	Persons employed		Remarks.
								Below ground.	Above ground.	
			Bengal-Jharia Coalfield (No. 1 Inspection Circle)—*contd.*							
27	Bansdeopur Coal Co. (P. H. Creet). C/o Martin & Co., Calcutta.	Bansdeopur	Bansdeopur, Kusunda, E. I. R.	G. H. Creet, *1st class service, No. 43.*	...	...	...	...	...	
28	Bansjora Coal Co. (See column No. 7).	Bansjora (5 mines).	Bansjora, Sijua, E. I. R.	G. F. W. Bapty, *1st class competency, No. 3. Authorization, No. 163, to act as manager of more than one mine.*	...	McLeod & Co., 31, Dalhousie Square, South, or Post Box No. 78, Calcutta.	...	239	222	
29	Barakar Coal Co., Ld. (See column No. 7).	Loyabad (10 mines).	Loyabad, Kusunda, E. I. R.	B. S. Field, *1st class service, No. 92. Authorization, No. 324, to act as manager of more than one mine.*	...	Bird & Co., 101-1, Clive Street, or Post Box No. 46, Calcutta.	...	769	597	
30	Barakar (North) Coal Co. Jharia P. O.	Lodna	Lodna, Jharia, E. I. R.	Joy Krishna Mitter, *1st class service, No. 40.*	...	...	...	570	180	
31	Barari (East) Coal Co. (Tricumji Jiban Dass). 25, Pollock Street, Calcutta.	Jinagora	Jinagora, Jharia, E. I. R.	Govardhan Dass Manishanker, *1st class service, No. 76. Authorization, No. 45, to act as manager of more than one mine.*	...	...	...	207	52	
32		Parbad	Parbad, Jharia, E. I. R.		...	...	...	49	20	
33	Barwabera (New) Coal Co. (Khiti Bhusan Mukherji) Jharia P. O.	Barwabera	Barwabera	Ram Moy Mukherji *Permit, No. 79.*	...	...	...	33	15	
34	Beerbhum (New) Coal Co., Ld. (See column No. 7).	Banstakola (3 mines).	Banstakola, Jharia, E. I. R.	Josiah Thomas, *1st class competency, No 80, in lieu of English certificate. Authorization, No. 120, to act as manager of more than one mine.*	...	Balmer, Lawrie & Co., 103, Clive Street, or Post Box No. 4, Calcutta.	...	71	60	
35	Bengal Bhatdih Coal Co., Ld. (See column No. 7).	Bhatdih (3 mines).	Murulidih, Katrasgarh, E. I. R.	Martin Munroe, *1st class competency, No. 27. Authorization, No. 295, to act as manager of more than one mine.*	...	Andrew Yule & Co., 8, Clive Row, or Post Box No. 150, Calcutta.	...	135	145	

36	Bengal (Central) Coal Co., Ld. (See column No. 7).	Kantapahari (West)	Kantapahari, Katrasgarh, E.I.R.	Meghji Bhimji Relia, *2nd class service, No. 85.*	...	...	...	67	15	
37	Bengal Coal Co., Ld. (See column No. 7).	Murulidih	Murulidih, Mohoda, B. N. R.	H. M. Bull, *1st class service, No. 23. Authorization, No. 212, to act as manager of more than one mine.*	...	Andrew Yule & Co., 8, Clive Row, or Post Box No. 150, Calcutta.	...	623	373	
38	Bengal Iron & Steel Co., Ld. (See column No. 7).	Noonoodih	Noonoodih, Jharia, E. I. R.	J. H. Stewart, *1st class competency, No. 72, in lieu of English certificate. Authorization, No. 255, to act as manager of more than one mine.*	...	Martin & Co., 6 & 7, Clive Street, or Post Box No. 23, Calcutta.	...	247	71	
39	Bengal Nagpur Coal Co., Ld. (See column No. 7).	Bhuggutdih (4 mines).	Bhuggutdih, Jharia, E. I. R.	W. O. Mitchell, *1st class service, No. 8. Authorization, No. 108, to act as manager of more than one mine.*	...	Andrew Yule & Co., 8, Clive Row, or Post Box No. 150, Calcutta.	...	596	375	
40	Bhalgora Coal Co., Ld. (See column No. 7.)	Bhalgora	Bhalgora, Jharia, E. I. R.	J. B. Wardlaw, *1st class competency, No. 73, in liew of English certificate.*	...	Sircar, Barnard & Co., 2, New China Bazar Street, or Post Box No. 286, Calcutta.	...	410	268	R. Barnard, Superintending Engineer.
41		Simlabahal	Simlabahal, Jharia, E. I. R.	G. G. Castles	...			282	164	
42	Bhattacharji, Ram Nath Kusunda P. O.	Godhur	Godhur, Kusunda, E. I. R.	Sriputty Paul *Permit, No. 221.*	...	...	...	15	10	
43	Bhattacharji, U. C. Sijua P. O.	Pandedih	Pandedih, Sijua, E. I. R.	U. C. Bhattacharji *Permit, No. 149.*	...	...	...	14	5	
44	Bhulanbarari Coal Co., Ld. (See column No. 7).	Bhulanbarari (6 mines).	Bhulanbarari, Jharia, E. I. R.	F. W. Heilgers, *1st class service, No. 18. Authorization, No. 326, to act as manager of more than one mine.*	...	F. W. Heilgers & Co., 136, Canning Street, or Post Box No. 185, Calcutta.	...	590	448	
45	Bilbera Coal Co., Ld. (See column No. 7).	Bilbera	...	Purna Chandra Ganguli, *2nd class service, No. 49. Authorization No. 325, to act as manager of more than one mine.*	...	N. C. Sircar & Sons, 5, Clive Ghat Street, or Post Box No. 285, Calcutta.	...	38	177	
46	Biswas, P. K. Katrasgarh P. O.	Ramkanali	Ramkanali, Katrasgarh, E.I.R.	...	...	...	...	...	...	
47	Boga & Co., Kusunda P. O.	Dhansar	Dhansar	H. F. Mehta, *Permit, No. 201.*	...	...	...	14	6	

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

Serial number.	Name of Owner or Company arranged in alphabetical order, and postal address.	Name of Mine, and number of separate Mines as defined by Rule 27.	Situation of Mine.	Name of Manager, and No. and Class of his Certificate, Authorization or Permit.	Name of Assistant Manager and No. and Class of his Certificate.	Name and address of Managing Agent.	Date of establishment of Special Rules.	Persons employ		Remarks.
								Below ground.	Above ground.	
			Bengal-Jharia Coalfield (No. 1 Inspection Circle)—*contd.*							
48	Borrea Coal Co., Ld. (See column No. 7).	Bhagaband (5 mines).	Bhagaband, Jharia, E. I. R.	S. H. Seddon, *1st class service, No. 73. Authorization, No. 106, to act as manager of more than one mine.*	...	F. W. Heilgers & Co., 136, Canning Street, or Post Box No. 185, Calcutta.	...	652	403	
49	Bose, J. N. 20, Baranasi Ghose's Street, Calcutta.	Kesalpur	Kesalpur, Katrasgarh, E. I. R.	.....	...	...	...	73	28	
50	B. R. & N. Coal Co. Jharia P. O.	Joyrampur	Joyrampur, Jharia, E. I. R.	Bira Mavji, *2nd class service, No. 99.*	Roja Valgi	...	...	54	33	
51	Budruchak Coal Mining Co., Ld. (See column No. 7).	Budruchak (6 mines).	Budruchak, Sijua, E. I. R.	J. W. Nierses, *1st class service, No. 19. Authorization, No. 151, to act as manager of more than one mine.*	...	Arathoon, Ld., 1, Vansittart Row, or Post Box No. 217, Calcutta.	...	148	80	
52	Bulliari Coal Co. (Seth Ranchhoddas Trikamji Jiwandas). Jharia P. O.	Bulliari	Bulliari, Jharia, E. I. R.	Seth Haridas Naithu, *1st class service, No. 108.*	...	...	...	185	129	
53	Burragarh Coal Co., Ld. (See column No. 7).	Burragarh	Burragarh, Jharia, E. I. R.	Gouri Sanker Ghattak, *1st class competency, No. 32. Authorization, No. 300, to act as manager of more than one mine.*	...	N. C. Sircar & Sons, 5, Clive Ghat Street, or Post Box No. 285, Calcutta.	...	198	104	
54	Busserya Coal Co., Ld. (See column No. 7).	Busserya	Busserya, Kusunda, E. I. R.	Butto Kristo Dash, *2nd class service, No. 94.*	...	Bhola Nath Dash & Co., Lalbagan, Chandernagore P. O.	...	196	110	
55	Chandore Coal Co. (B. Roy & others). Katrasgarh P. O.	Chandore (2 mines).	Chandore, Katrasgarh, E. I. R.	Dhon Kristo Mazumdar, *Permit, No. 126.*	...	...	...	44	14	

56	Chandra, Girish Chandra Katrasgarh P. O.	Ramkanali (2 mines).	Ramkanali, Katrasgarh, E. I.R.	Nagendra Nath Dass, *Permit, No. 46. Authorization, No. 126, to act as manager of more than one mine.*	...	...	...	...	...
57	Chandra, Haresmal Ram Katrasgarh P. O.	Tettulia (2 mines).	Tettulia, Katrasgarh, E. I. R.	Jogadamba Prasad Lala, *2nd class service, No. 53. Authorization, No. 32, to act as manager of more than one mine.*		...	...	35	10
58	Chatterji, Singh & Co. (Rajendra Nath Chatterji & Gour Mohan Singh). Nowagarh P. O.	Borora	Borora	Romesh Chandra Das Gupta. *Permit, No. 111.*	...	...	...	5	10
59	Chota Nagpur, Maharaja Bahadur. Ranchi P. O.	Amlabad	Amlabad, Bhojudih, B. N. R.	Mukunda Lal Missra, *2nd class service, No. 163.*	...	P. Chaudhuri Dhanbaid.	...	...	...
60	Choudhuri, Satya Taran Sijua P. O.	Dhobakhera Incline No. 1.	Dhobakhera	Kulada Persad Das Gupta.	...	...	...	4	25
		„ „ 4.		Ramavatar Singh	...	...	...		
61		Lutipahari	Lutipahari	Satya Taran Choudhuri	...	...	...	4	30
62		Pandedih	Pandedih, Sijua, E. I. R.	Manmatha Nath Mukherji, *Permit, No. 101.*	...	...	...	36	13
63	Chuni Lal Coal Co. Kusunda P. O.	Bulliari	Bulliari, Kusunda, E. I. R.	Abola Bandhu Roy Chowdhury. *Authorization, No. 61, to act as temporary manager.*	...	...	...	93	33
64	Chutto Lal Kutchi Sijua P. O.	Pandedih	Pandedih, Sijua, E. I. R.	.....	...	...	...	...	...
65	C. M. & Co. (Chimanlal Mangaldas Keshan Lal Parekh). Katrasgarh P. O.	Kendwadih	Kendwadih	D. A. Anderson, *1st class competency, No. 97, in lieu of English certificate. Authorization, No. 272, to act as manager of more than one mine.*	...	...	...	41	15
66		Koradih	Koradih, Khanudih, B. N. R.		...	...	...	10	10
67	Commercial Syndicate 16-1, Canning Street, Calcutta.	Lakshmi	Godhur, Kusunda, E. I. R.	Manmotha Nath Mukherji, *Permit, No. 101.*	...	...	...	...	...
68	Das, L. H. Jharia P. O.	Kujama	Kujama, Jharia, E. I. R.	Lira Walji, *1st class service, No. 107.*	...	...	...	121	101
69		Pandeybera	Kujama, Jharia, E. I. R.		...	...	...	60	29

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

Serial number.	Name of Owner or Company arranged in alphabetical order, and postal address.	Name of Mine, and number of separate Mines as defined by Rule 27.	Situation of Mine.	Name of Manager, and No. and Class of his Certificate, Authorization or Permit.	Name of Assistant Manager and No. and Class of his Certificate.	Name and address of Managing Agent.	Date of establishment of Special Rules.	Persons employed		Remarks.
								Below ground.	Above ground.	
			Bengal-Jharia Coalfield (No. 1 Inspection Circle)—*contd.*							
70	Das, Ram . . . . . Adra P. O.	Barahmasia . .	Muraidih	Nilmadhab Ghosh .	...	...	...	9	12	
71	Deoji Goa & Co. . . .	Jinagora . .	Jinagora, Jharia, E. I. R. .	.....	...	...	...	...	...	Previously owned by K. J. Chuckerbutty.
72	Dheriajoba Coal Co. . . . . (Srimotya Jogat Mohini Dassi). 53, Mirzapur Street, Calcutta.	Dheriajoba . .	Dheriajoba, Kusunda, E. I. R.	Gopinath Chatterji, *2nd class service, No. 12.*	...	...	...	5	25	
73	Dhurmaband Coal Co. . . . (D. N. Bose & Brothers), 39, Strand Road, Calcutta.	Dharmaband .	Dharmaband . . .	Gosto Behari Roy, *2nd class service, No. 124.*	...	...	...	..	...	
74	Dobari Coal Co. . . . (Satya Kinkar Sahana & Karuna Kinkar Sahana) (See column No. 7).	Dobari . .	Dobari, Jharia, E. I. R. .	Natabar Dass, *2nd class service, No. 96. Authorization, No. 137, to act as manager of more than one mine.*	...	Woomesh Chander Banerji, 38, Chunapukur Lane, Calcutta.	...	9	5	
75		Ganhudi . .	Ganhudi		...		...	51	9	
76	Dosa & Co., G.K. . . . (Dosa, Ganji & Khunji) Jharia P. O.	Futtehpur . .	Futtehpur, Jharia, E. I. R. .	Ganji Dosa, *2nd class service, No. 127.*	...	...	...	21	15	
77	Dumra Coal Co. . . . . Nowagarh P. O.	Pinalgoria . .	Pinalgoria	Ram Recha Singh *Permit, No. 121.*	...	...	...	28	30	
78	Dutt, B. L. . . . Katrasgarh P. O.	Ramkanali . .	Ramkanali, Katrasgarh, E. I. R.	Bihari Lall Dutt, *1st class service, No. 70.*	...	...	...	18	3	
79	East Indian Coal Co., Ld. (See column No. 7).	Brahmanbarari & Bhulanbarari.	Brahmanbarari & Bhulanbarari, Jharia, E. I. R.	T. Adamson, *1st class competency, No. 14, in lieu of English certificate.*	E. Miller .	Jardine, Skinner & Co., 4, Clive Row, or Post Box No. 51, Calcutta.	...	890	575	J. J. Turnbull, Agent.
80		Bulliari and Khaira.	Bulliari & Khaira, Kusunda, E. I. R.	R. G. M. Bathgate, *1st class competency, No. 8, in lieu of English certificate.*	...		...	351	121	
81		Kendwadih .	Kendwadih, Kusunda, E. I. R.				...	550	285	

82	Eastern Coal Co., Ld. (See column No. 7).	Bhowra (9 mines).	Bhowra, Jharia, E. I. R.	R. I. Browne, *1st class competency, No. 17, in lieu of English certificate. Authorization, No. 190, to act as manager of more than one mine.*	...	Mackinnon, Mackenzie & Co., 16, Strand, or Post Box No. 163, Calcutta.	...	901	140	
83		Kankani	Kankani, Sijua, E. I. R.	A. B. Crole, *1st class competency, No. 49, in lieu of English certificate.*	...		...	589	431	
84		Pootki (2 mines).	Pootki, Jharia, E. I. R.		...		...	114	46	
85	Empire Coal Co., Ld. (See column No. 7).	Sudamdih	Sudamdih, Jharia, E. I. R.	J. W. Cooper, *2nd class service, No. 6.*	...	Williamson, Magor & Co., 4, Mangoe Lane, or Post Box No. 177, Calcutta.	...	50	15	
86	Equitable Coal Co., Ld. (See column No. 7).	Hariladih	Hariladih, Jharia, E. I. R.	F. L. Cork (Jr.), *1st class competency, No. 31. Authorization, No. 285, to act as manager of more than one mine.*	...	MacNeill & Co., 2, Clive Ghat Street, or Post Box No. 15, Calcutta.	...	97	73	
87	Ghansham Das Coal Co. Nowagarh P. O.	Pinalgoria	Pinalgoria	Ramtaran Roy, *Permit, No. 124.*	...	...	...	39	7	
88	Ghela Panchan & Co. Jharia P. O.	Joyrampur (Lower).	Joyrampur, Jharia, E. I. R.	Norendra Nath Bose, *Permit, No. 117.*	...	...	...	72	30	
89	Ghosal, Chatterji & Co. Sijua P. O.	Khas Paredih	Khas Paredih	Moheswar Ghosal, *Permit, No. 139.*	...	...	...	19	6	
90	Ghosh, Akshaya Kumar Katrasgarh P. O.	Dharmuband	Dharmuband	Bhola Nath Misra *Permit, No. 114.*	...	...	...	22	16	
91	Gobindpur Coal Co., Ld. Katrasgarh P. O.	Gobindpur (3 mines).	Gobindpur, Katrasgarh, E. I. R.	W. H. Topham, *1st class competency, No. 11. Authorization, No. 288, to act as manager of more than one mine.*	...	F. W. Heilgers & Co., 136, Canning Street, or Post Box No. 185, Calcutta.	...	131	127	
92	Gobindpur (South) Collieries, Ld. (See column No. 7).	Gobindpur (South).	Gobindpur, Katrasgarh, E. I. R.	Anurup Kristo Banerji, *1st class service, No. 41. Authorization, No. 252, to act as manager of more than one mine.*	...	M. L. Laik & Banerji, 7, Swallow Lane, or Post Box No. 141, Calcutta,	...	247	52	Previously owned by R. B. Singh.
93	Gopaldas Trikamji Jivandas	Jinagora	Jinagora Jharia	...	...	...	...	207	52	

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

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								Below ground.	Above ground.	
			Bengal-Jharia Coalfield (No. 1 Inspection Circle)—*contd.*							
94	Gopalichak Coal Co., Ld. (See column No. 7).	Gopalichak, (2 mines).	Gopalichak, Jharia, E. I. R.	A. Gregory, *1st class competency, No. 28, in lieu of English certificate.*	...	McLeod & Co., 31, Dalhousie Square, South, or Post Box No. 78, Calcutta.	...	430	360	
95		Gopalichak (West) (3 mines).	Kurkend, Kusunda, E. I. R.	H. Adamson, *1st class competency, No. 36.*	...		...	456	102	
96	Gorain, Gopi Nath Chirkunda P. O.	Borora	Borora, Khanudih, B. N. R.	Lakshi Narayan Banerji	...	...	...	...	...	
97	Gorain, N. L., and others Jharia P. O.	Jairamdih	...	Rasaraj Sikdar, *Permit, No. 85.*	...	...	...	37	12	
98	Gorain, Ram Ranu 12, Kalakar Street, Calcutta.	Kendwadih	Kendwadih, Khanudih, B.N.R.	Bhola Nath Ghosh, *Permit, No. 115.*	...	...	...	38	23	
99	Gouri Shankar, Jagannath & Co.	Barahmasia	Barahmasia, Khanudih, B.N.R.	M. C. Maharaj	...	...	...	...	...	
100	G. P. C. & Co., (Gova Petha) Jharia P. O.	Jinagora	Jinagora, Jharia, E. I. R.	Gova Petha	...	...	...	82	33	
101	Hariladih Coal Co., Ld. (See column No. 7).	Burragarh	Burragarh, Jharia, E. I. R.	P. Brimlow, *1st class competency, No. 100, in lieu of English certificate.*	...	MacNeill & Co., 2, Clive Ghat Street, or Post Box No. 15, Calcutta.	...	160	76	
102		Kendwadih	Kendwadih, Jharia, E. I. R.		...		...			
103	Howji, Tribhuban Dass Kusunda P. O.	Gararia	Gararia, Kusunda, E. I. R.	Dollabji Howji, *2nd class service, No. 97.*	Ramji Purushuttum.	...	...	138	103	
104	Huntodih Coal Co., Ld. (See column No. 7).	Huntodih (9 mines).	Huntodih, Katrasgarh, E. I. R.	A. G. Hailes, *1st class service, No. 61. Authorizations, Nos. 103 and 109, to act as manager of more than one mine.*	...	Shaw, Wallace & Co., 20, Strand Road, or Post Box No. 70, Calcutta.	...	282	289	

105	Indian Coal Association (Tribhuban Rewa Sankar and Bissonath Bhai Sankar) Bhujudih P. O.	Pathardih	Pathardih, Jharia, E. I. R.	Bissonath Bhai Sankar	...	...	...	...	...
"		Jamadoba, Sec. 1	...	R. H. Dundas, *1st class competency, No. 88, in lieu of English certificate. Authorization, No. 217, to act as manager of more than one mine.*	...				
		Jamadoba, Sec. 2	...	R. F. Campbell, *1st class competency, No. 56, in lieu of English certificate.*	...				
106	Indian Collieries Syndicate, Ld. (See column No. 7).	Jamadoba, Sec. 3	...	A. Allardyce, *1st class competency, No. 123, in lieu of English certificate.*	...	Kilburn & Co., 4, Fairlie Place, or Post Box No. 61, Calcutta.	...	1,010	792
		Jamadoba, Sec. 4	...	J. Hunter, *1st class competency No. 122, in lieu of English certificate. Authorization, No. 334, to act as manager of more than one mine.*	...				
107	Isabella Coal Co. (Mrs. A. Shrager) (See column No. 7).	Isabella	Nudkhurki	H. G. Piggford, *1st class competency, No. 30. Authorization, No. 248, to act as manager of more than one mine.*	...	Shragers, Ld., 7, Swallow Lane, Calcutta.	...	134	131
108	Jetha Gobardhan, Nowagarh P. O.	Muraidih	Muraidih, Khanudih, B.N. R.	Valji Dhamji	...	...	...	...	...
109	Jharia Coal Association (S. K. Mukherji) Bansjora P. O.	Harinachak	Pandedih, Sijua, E. I. R.	Jamini Nath Bhattacharji, *Permit, No. 98.*	...	..	...	35	6
110	Jharia Coal Syndicate (See column No. 7).	Emampahari	Kujama, Jharia, E. I. R.	Sashi Bhusan Mukherji, *Permit, No. 110.*	...	Surendra Nath Sen, Koilas Bose's Lane, Ramkrishnapur, Howrah P. O.	...	28	14
111	Jharia Coal Syndicate, Ld. (See column No. 7).	Dheriajoba	Dheriajoba, Kusunda, E. I. R.	F. Miller, *1st class competency, No. 29, in lieu of English certificate.*	...	Jardine, Skinner & Co., 4, Clive Row, or Post Box No. 51, Calcutta.	...	230	29
112	Jharia Colliery Co., Ld. (See column No. 7).	Bhaga	Bhaga, Jharia, E. I. R.	W. A. Hockly, *1st class service, No. 39.*	T. Simpson	Hoare, Miller & Co., 38, Strand Road, or Post Box No. 63, Calcutta.	...	214	131

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

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								Below ground.	Above ground.	
			Bengal-Jharia Coalfield (No. 1 Inspection Circle)—*contd.*							
113	Jharia (East) Coal Co., Ld. (See column No. 7).	Jharia (East) or Goluckdih.	Goluckdih, Jharia, E. I. R.	J. A. C. Bayne, *1st class competency, No. 121, in lieu of English certificate.*	...	Shaw, Wallace & Co., 20, Strand Road, or Post Box No. 70, Calcutta.	...	300	38	Previously owned by the Great Eastern Coal Co.
114	Jharia Katras Coal Co.. (Bihari Lal Trigunait) Katrasgarh P. O.	Braroabara	Braroabara, Katrasgarh, E. I. R.	Prankishore Trigunait, *Permit, No. 140.*	...	...	...	15	7	
115	Jharia (South) Coal Co. Bhujudih P. O.	Kandra (Upper)	Upper Kandra	Kalipoda Mukherji, *Permit, No. 219.*	...	...	...	33	43	
116	Jinagarah Coal Co., Ld. (See column No. 7).	Jinagora	Jinagora	E. D. Onraet, *1st class service, No. 20.*	...	Hoare, Miller & Co., 38, Strand Road, or Post Box No. 63, Calcutta.	...	...	...	
117	Johu and Arratoon Kusunda P. O.	Ramgarh	Tetturia, Ramgarh	Ashutosh Ghosh	...	...	...	...	...	
118	Joyrampur Coal Co. Jharia P. O.	Joyrampur	Joyrampur, Jharia, E. I. R.	Ramji Halu, *2nd class service, No. 160.*	...	...	...	50	30	
119	Joyrampur Coal Concern (J. K. Mukherji) 53, Chunapukur Lane, Calcutta.	Joyrampur	Joyrampur, Jharia, E. I. R.	Puranjan Mukherji	...	...	...	...	...	
120	Jumoni Coal Co., Ld. (See column No. 7).	Madhuband (6 mines)	Madhuband, Katrasgarh, E. I. R.	F. S. Benson, *1st class competency No. 95, in lieu of English certificate. Authorization, No. 274, to act as manager of more than one mine.*	...	Bird & Co., 101-1, Clive Street, or Post Box No. 46, Calcutta.	...	330	210	H. C. Veasey, Agent.
121	Kabiraj, R. C. Sijua P. O.	Pandedih	Pandedih, Katrasgarh, E. I. R.	.....	...	...	...	...	...	
122	Kanga & Co. Kusunda P. O.	Alkusa	Alkusa, Kusunda, E. I. R.	Ram Chandra Marwari, *1st class service, No. 103. Authorization, No. 240, to act as manager of more than one mine.*	...	...	..	167	105	
123		Kiska	Kiska, Kusunda, E. I. R.		...	...	...			
124	Kanji Narsau Adra P. O.	Barahmasia	Barahmasia, Khanudih, B.N.R.	.....	...	...	...	...	...	

125	Katras Bhuputdih Coal Co. (Tarini Prosad Roy and Hari Dhun Das). Katrasgarh P. O.	Bhuputdih (South)	Katras Khas, Katrasgarh, E. I. R.	Kishory Mohan Roy, *Permit, No. 200.*	...	...	...	22	12
126	Katras Oriental Coal Syndicate (B. & M. Trigunait) Katrasgarh P. O.	Pandedih	Pandedih, Katrasgarh, E. I. R.	Bepin Behari Roy, *Permit, No. 235.*	...	...	...	14	10
127	Kendwadih Coal Co. (Gajadhar Marwari, Nogendra Nath Mandal and Mukundaram Rai) Nowagarh P. O.	Kendwadih	Kendwadih, Jharia, E. I. R.	Mukunda Lall Mondal, *2nd class service, No. 77.*	...	...	...	32	40
128	Kessurgurah Coal Co., Ld. (See column No. 7).	Kessurgurah	Kessurgurah, Khanudih, B. N. R.	Basanta Kumar Roy, *1st class service, No. 88. Authorization, No. 258, to act as manager of more than one mine.*	...	M. L. Laik & Banerji, 7, Swallow Lane, or Post Box No. 141, Calcutta.	...	107	41
129	Khaira Coal Syndicate, Ld. (See column No. 7).	Kurkend	Kurkend, Kusunda, E. I. R.	F. Miller, *1st class competency, No. 29, in lieu of English certificate.*	...	Jardine, Skinner & Co., 4, Clive Street, or Post Box No. 51, Calcutta.	...	133	35
130	Khan Brothers (See column No. 7).	Kujama	Kujama, Jharia, E. I. R.	Abass Khan, *Permit, No. 164.*	...	Dr. G. N. Khan, 33, Canning Street, Calcutta.	...	27	26
131	Khandesh, Berar and Gujrat Coal Concern (Rastamji Ardesir Macadam). Jharia P. O.	Chanda (2 mines).	Chandrabad, Jharia, E. I. R.	Nowroji Nusserwanji Ghandi.	...	...	...	30	30
132	Kharkabad Coal Syndicate (F. D. Whyte) Kusunda P. O.	Kharkabad	Kharkabad, Kusunda, E. I. R.	F. D. Whyte. *Authorization, No. 55, to act as temporary manager.*	...	...	...	14	21
133	Khas Jharia and Bulliari Coal Concern. (Khora Ramji) Jharia P. O.	Bulliari	Bulliari, Jharia E. I. R.	Mulji Akhoy, *1st class service, No. 119. Authorization, No. 242, to act as manager of more than one mine.*	...	...	...	131	72
134		Khas Jharia	Khas Jharia, Jharia, E. I. R.						
135		Futtehpur	Futtehpur, Jharia, E. I. R.	Mogha Teja	...	...	...	84	48
136	Khas Jharia Coal Co. Jharia P. O.	Phularibad	Khas Jharia, Jharia, E. I. R.	Jnanendra Nath Mukherji, *1st class service, No. 91. Authorization, No. 323, to act as manager of more than one mine.*	...	...	...	166	114
137	Khas Jharia Colliery Co. (See column No. 7).	Khas Jharia	Khas Jharia, Jharia, E. I. R.	John Wilson, *1st class competency, No. 104, in lieu of English certificate.*	...	F. W. Heilgers & Co., 136, Canning Street, or Post Box No. 185, Calcutta.	...	400	165

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

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								Below ground.	Above ground.	
			Bengal-Jharia Coalfield (No. 1 Inspection Circle)—*contd.*							
138	Khengarji Triku & Co. . . Jharia P. O.	Joyrampur . .	Joyrampur, Jharia, E. I. R. .	...	...	...	...	60	22	
139	Khimji Moorji & Co. . . . Jharia P. O.	Joyrampur . .	Joyrampur, Jharia, E. I. R. .	Gowamul Khimji, *Permit, No. 112.*	...	...	...	73	45	
140	K. M. Selected Coal Co. . . (Kalianji Shamji) (See column No. 7).	Kusunda . .	Kusunda, Kusunda, E. I. R. .	Deoram Purshotam Vankani, *2nd class service, No. 30.*	...	Kanji Monji, 210, Harrison Road, Calcutta.	...	93	41	
141	Koondoo, Sunda Charan . . 4, Sambhu Babu's Lane, Calcutta.	Kesalpur . .	Kesalpur, Katrasgarh, E. I. R.	Charu Chandra Banerji, *Permit, No. 196.*	...	...	...	30	20	
142	Kor, Sri Hari . . . . Jaydebkenduli P. O., Birbhum.	Dobari . .	Dobari, Jharia, E. I. R. .	Dhon Hari Kor . .	...	...	...	20	10	
143	Kujama (North) Coal Co. . . (Ganji Dosa) Jharia P. O.	Kujama . .	Kujama, Jharia, E. I. R. .	...	...	...	...	66	43	Previously Sainthia Coal Company's Muhuriband Colliery.
144	Kundu & Co. . . . . (Bejoy Narayan Kundu and Kekobad H. Rao). Kusunda P. O.	Dhansar . .	Dhansar	Dinsha Jamshedji Madan, *Permit, No. 198.*	...	...	...	31	27	
145	Kurkend (Central) Coal Co., Ld. (See column No. 7).	Kurkend .	Kurkend, Kusunda, E. I. R. .	D. A. Whyte, *1st class service, No. 45.*	...	Anderson, Wright & Co., 22, Strand Road, or Post Box No: 140, Calcutta.	...	642	78	
146	Kurkend Coal Co. . . . (B. Roy and others). Kusunda P. O.	Kurkend . .	Kurkend, Kusunda, E. I. R. .	Indra Narayan Chandra, *1st class service, No. 89. Authorization, No. 185, to act as manager of more than one mine.*	...	...	...	100	55	
147	Kusunda and Nayadi Collieries, Ld. (See column No. 7).	Kusunda . .	Kusunda, Kusunda, E. I. R. .	C. L. Phillips, *1st class service, No. 100.*	G. John, *1st class service, No. 44.*	Martin & Co., 6 and 7, Clive Street, or Post Box No. 23, Calcutta.	...	2,196	1,011	
148	Kusunda (New) Coal Co., Ld. . (See column No. 7).	Kusunda . .	Kusunda, Kusunda, E. I. R. .	K. C. De, *Permit, No. 172.*	...	Mitra and Chaudhuri, 2, Swallow Lane, Calcutta.	...	75	32	Previously owned by J. K. Roy.
149	Lakorka Coal Co., Ld. . . (See column No. 7).	Lakorka	Lakorka, Katrasgarh, E. I. R.	Lalit Mohan Chowdhuri, *1st class service, No. 33.*	...	M. L. Laik and Banerji, 7, Swallow Lane, or Post Box No. 141, Calcutta.	...	333	228	

150	Lall, Daroga Katrasgarh P. O.	Belanjabad	Belanjabad	Ram Ranjan Sikdar, *Permit, No. 153.*	...	...	...	19	2		
151		Chasnalla	Chasnalla, Jharia, E. I. R.	T. C. Murray, *1st class competency, No. 66 in lieu of English certificate. Authorization, No. 187, to act as manager of more than one mine.*	...		...	106	235		
152	Lodna Colliery Co., Ld. (See column No. 7).	Lodna (5 mines).	Lodna, Jharia, E. I. R.	A. C. Bull, *1st class competency, No. 14. Authorization, No. 223, to act as manager of more than one mine.*	...	Turner, Morrison & Co., 6, Lyons Range, or Post Box No. 68, Calcutta.	...	1,204	959		
153		Madhuband	Madhuband								
154	Lutchipur Coal Co., Ld. (See column No. 7).	Choitodih (10 mines).	Choitodih, Katrasgarh, E. I. R.	T. C. Barker, *1st class service, No. 67. Authorization, No. 40, to act as manager of more than one mine.*	...	Bird & Co., 101-1, Clive Street, or Post Box No. 46, Calcutta.	...	160	325	H. C. Veasey, General Manager.	
155	Mahato, Baidya Nath Katrasgarh P. O.	Bahiardih	Bahiardih, Katrasgarh, E. I. R.	Dawrika Prasad Lala, *Permit, No. 87.*	...	.....	...	5	4		
156	Manbhum (New) Coal Co., Ld. (See column No. 7).	Ganzlatan (2 mines).	Ganzlatan, Sijua, E. I. R.	T. C. Piggford, *1st class competency, No. 57, in lieu of English certificate. Authorization, No. 327, to act as manager of more than one mine.*	...	Octavius Steel & Co., 14, Old Court House Street, or Post Box No. 55, Calcutta.	...	155	122		
157	Mandra Coal Co. (B. Roy) Dumra P. O.	Mandra	Mandra, Katrasgarh, E. I. R.	Hrishikesh Chatterji, *Permit, No. 84.*	...	.....	...	20	31		
158	M. B. Co. Nowagarh P. O.	Mandra	Mandra, Katrasgarh, E. I. R.	D. A. Anderson, *1st class competency, No. 97, in lieu of English certificate. Authorization, No. 272, to act as manager of more than one mine.*	...	.....	...	75	8		
159	Marine Coal Co., Ld. (See column No. 7).	Kurkend (East)	Kurkend, Kusunda, E. I. R.	R. F. Augier, *1st class service, No. 26.*	...	McLeod & Co., 31, Dalhousie Square, South, or Post Box No. 78, Calcutta.	...	123	153	Previously owned by the East Kurkend Coal Company.	
160	Marwari, Bhagwandas Nowagarh, P. O.	Pinalgoria	Pinalgoria	Bhola Nath Hazra, *Permit, No. 170.*	...	.....	...	16	21		
161	Marwari, Jaharmal and Ram Protab. Katrasgarh P. O.	Pandedih	Pandedih, Sijua, E. I. R.	Man Gobind Dutt, *Permit, No. 174.*	...	.....	...	18	8		

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

Serial number.	Name of Owner or Company arranged in alphabetical order and postal address.	Name of Mine, and number of separate Mines as defined by Rule 27.	Situation of Mine.	Name of Manager, and No. and Class of his Certificate, Authorization or Permit.	Name of Assistant Manager and No. and Class of his Certificate.	Name and address of Managing Agent.	Date of establishment of Special Rules.	Persons employed		Remarks.
								Below ground.	Above ground.	
			Bengal-Jharia Coalfield (No. 1 Inspection Circle)—*contd.*							
162	Moheshpur Coal Co., Ld. (See column No. 7).	Moheshpur	Moheshpur, Katrasgarh, E. I. R.	Ananta Ram Bhor, *2nd class competency, No. 26. Authorization, No. 213, to act as manager of more than one mine.*	...	M. L. Laik and Banerji, 7, Swallow Lane, or Post Box No. 141, Calcutta.	...	50	66	
163	Mondal, Ajodhyaram Katrasgarh P. O.	Kantapahari	Kantapahari, Katrasgarh, E. I. R.	Ram Ratan Mondal, *Permit, No. 202.*	...	...	...	23	15	
164	Motiram Coal Co. Kusunda P. O	Kurkend	Kurkend, Kusunda, E. I. R.	Abola Bandhu Roy Chowdhury. *Authorization, No. 61, to act as temporary manager.*	...	...	...	79	15	
165	Mowji, Ambarsi Nowagarh P. O.	Muraidih	Muraidih, Khanudih, B. N. R.	...	...	...	...	...	...	
166	Mucheridih Coal Co, Ld. (See column No. 7).	Mucheridih (7 mines).	Mucheridih	G. H. Crabb, *1st class competency, No. 26, in lieu of English certificate. Authorization, No. 307, to act as manager of more than one mine.*	...	Bagram & Co., 14-2, Clive Street, Calcutta.	...	200	164	
167	Mukherji & Co., K. L. Katrasgarh P. O.	Tettulia	Tettulia, Katrasgarh, E. I. R.	Poolin Behari Mittra, *1st class service, No. 56.*	...	...	...	...	...	
168	Mukherji & Co., K. P. 43-3, Strand, Calcutta.	Kandra	Het Kandra	...	...	...	...	13	58	
169	Mukherji & Co., S. K. Sijua P. O.	Pandedih	Pandedih, Sijua, E. I. R.	Nanda Lal Mukherji	...	...	...	...	...	
170	Muttigurra Coal Co., Ld. (See column No. 7).	Muttigurra	Muttigurra	F. B. Foster, *1st class service, No. 47. Authorization, No. 246, to act as manager of more than one mine.*	...	Octavius Steel & Co., 14, Old Court House Street, or Post Box No. 55, Calcutta.	...	107	380	
171	M. V. A. Coal Concern (M. V. Apcar & Co.) 6, Fancy Lane, Calcutta.	Joyrampur	Joyrampur, Jharia, E. I. R.	E. A. Whyte, *1st class service, No. 74.*	...	...	...	239	88	Previously owned by the R. M. R. Coal Concern.

172	Nandi, Maharaja Manindra Chandra, Cossimbazar P. O., Murshidabad.	Ekra Khas . .	Ekra, Kusunda, E. I. R. .	Ram Ram Chandra, *1st class service, No. 109. Authorization, No. 239, to act as manager of more than one mine.*	...	...	...	382	145	Monmotho Nath Roy, General Manager.
173	Nanji, Khanji & Sanji . . Jharia P. O.	Kujama . .	Kujama, Jharia, E. I. R. .	Valji Kheta, *2nd class service, No. 75.*	...	...	...	59	14	
174	National Coal Co. . . . (Radha Kinkur Chattoraj) Katrasgarh P. O.	Chandore . .	Chandore, Sijua, E. I. R. .	Upendra Nath Nandi, *Permit, No. 131.*	...	...	...	24	17	
175	National Coal Co., Ld. . . (See column No. 7).	Angarpatra . .	Angarpatra, Katrasgarh, E. I. R.	J. T. Robinson, *1st class competency, No. 137, in lieu of English certificate. Authorization, No. 312, to act as manager of more than one mine.*	...	Planters' Stores and Agency Co., Ld., 3, Mission Row, Calcutta.	...	60	79	Previousiy owned by J. N. Srimani.
176		Kantapahari .			...		...	87	16	
177	National North Barahmasia Coal Co. (Biru Mistry). Katrasgarh P. O. . . .	Muraidih . .	Muraidih, Khanudih, B. N. R.	Sher Mahomed Khan .	...	...	...	...	...	
178	North-West Coal Co., Ld. . . (See column No. 7).	Ena . . . (2 mines).	Ena, Jharia, E. I. R. . .	W. C. Heysham, *1st class service, No. 79. Authorization, No. 101, to act as manager of more than one mine.*	...	Andrew Yule & Co., 7, Clive Row, or Post Box No. 150, Calcutta.	...	160	105	
179	North-West Jharia Coal Syndicate (C. A. Forbes, P. N. Banerji and Ram Chandra Marwari), Nowagarh P. O.	Asakuti . .	Majura and Ganespur . .	Kshetra Nath Banerji, *Permit, No. 188.*	...	...	...	84	19	
180	Nowagarh Coal Co., Ld. . . (See column No. 7).	Katras . . (13 mines).	Katras, Katrasgarh, E. I. R..	T. K. Fleischer, *1st class service, No. 10. Authorization, No. 35, to act as manager of more than one mine.*	...	Bird & Co., 101-1, Clive Street, or Post Box No. 46, Calcutta.	...	547	489	H. C. Veasey, General Manager.
181	Nudkhurki Coal Co. . . . (See column No. 7).	Nudkhurki . (14 mines).	Nudkhurki	Gopal Chandra Bhuttacharji, *1st class service, No. 77. Authorization, No. 165, to act as manager of more than one mine.*	...	Shragers, Ld., 7, Swallow Lane, Calcutta.	...	123	198	
182	Pain, B. L. . . . . Katrasgarh P. O.	Chandore . .	Chandore, Sijua, E. I. R. .	Narendra Nath Roy, *2nd class service, No. 169.*	...	...	...	22	13.	
183	Pandakanali Coal Co., Ld. . (See column No. 7).	Pandakanali . (3 mines).	Pandakanali . . .	B. S. Field, *1st class competency No. 92, in lieu of English certificate. Authorization, No. 324, to act as manager of more than one mine.*	...	Bird & Co., 101-1, Clive Street, or Post Box No. 46, Calcutta.	...	122	164	

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

Serial number.	Name of Owner or Company arranged in alphabetical order and postal address.	Name of Mine, and number of separate Mines as defined by Rule 27.	Situation of Mine.	Name of Manager, and No. and Class of his Certificate, Authorization or Permit.	Name of Assistant Manager and No. and Class of his Certificate.	Name and address of Managing Agent.	Date of establishment of Special Rules.	Persons employed		Remarks.
								Below ground.	Above ground.	
			Bengal-Jharia Coalfield (No. 1 Inspection Circle)—*contd.*							
184	Pandedih Coal Syndicate (Bajrangbali Singh, Mit Narayan Singh and Munshi Lal Mistri) Katrasgarh P. O.	Pandedih	Pandedih, Sijua, E. I. R.	Raghu Nath Lal *Permit, No. 168.*	...	...	...	45	6	
185	Pandeybera Colliery Co. (Daya Sankar Shamji) Jharia P. O.	Pandeybera	Kujama, Jharia, E. I. R.	Daya Sankar Shamji, *2nd class service, No. 19.*	...	...	...	70	47	
186	Parasea Collieries, Ld. (See column No. 7).	Nichitpur	Nichitpur	F. L. Cork, *1st class service, No. 30. Authorization, No. 188, to act as manager of more than one mine.*	...	Shaw, Wallace & Co., 20, Strand Road, or Post Box No. 70, Calcutta.	...	75	135	
187	Parelgaria Coal Co. (Komolram Marwari) Kusunda P. O.	Parelgaria	Damra	Kishory Mohan Chatterji.	...	...	...	26	25	
188	Patel & Co. Kusunda P. O.	Kusunda	Kusunda, Kusunda, E. I. R.	Keshob Chandra Mitter, *2nd class service, No. 60.*	...	...	...	97	42	
189	Phœnix Coal Co., Ld. (See column No. 7).	Tasra	Tasra	J. G. Herriotts, *1st class competency, No. 20, in lieu of English certificate. Authorization, No. 198, to act as manager of more than one mine.*	...	Andrew Yule & Co., 8, Clive Row, or Post Box No. 150, Calcutta.	...	...	...	
190	Phularitand Coal Co., Ld. (See column No. 7).	Phularitand (4 mines).	Phularitand	...	...	N. C. Sircar & Sons, 5, Clive Ghat Street, or Post Box No. 285, Calcutta.	...	158	281	
191	Pipratand Coal Co., Ld. (See column No. 7).	Pipratand	Pipratand	L. R. Somerville, *1st class competency, No. 75, in lieu of English certificate. Authorization, No. 281, to act as manager of more than one mine.*	...	Williamson, Magor & Co., 4, Mangoe Lane, or Post Box No. 177, Calcutta.	...	200	70	

192	Polite Barahmasia Coal Co. (Mahomed Abdul Gany and Sheik Ramatulla.)	Barahmasia	Barahmasia	Babu Basiruddin	...	Biru Mistri, Giridih.	...	...	...		
193	Katrasgarh P. O.	Muraidih	Muraidih								
194	Fremji and Devshi Hamir Jharia P. O.	Durgapur	Durgapur, Jharia, E. I. R.	Devshi Hamir, *2nd class service, No. 1. Authorization, No. 178, to act as manager of more than one mine.*	...	...	...	74	52		
195		Futtehpur	Futtehpur, Jharia, E. I. R.								
196	Raha and Son, Sasi Bhusan (See column No. 7).	Godhur (4 mines).	Godhur, Kusunda, E. I. R.	Purna Chunder Biswas, *1st class service, No. 105. Authorization, No. 87, to act as manager of more than one mine.*	...	...	...	331	104	Previously owned by Mylne & Co.	
197	Ramjidas Bechardas Kusunda P. O.	Gararia	Gararia, Kusunda, E. I. R.	Ashutosh Dutt	...	...	...	70	54		
198	Ranidih Coal Co. (Sasi Bhusan Chatterji) (See column No. 7).	Ranidih (4 mines).	Ranidih, Katrasgarh, E. I. R.	..	...	S. Chatterji & Sons, 50, Nandaram Sen's Street, Calcutta.	...	34	50		
199	Raniganj Coal Association, Ld. (See column No. 7).	Alkusa Workings at Gandhudi and part of Alkusa.	Kiska, Kusunda, E. I. R.	S. Kirk, *1st class competency, No. 79, in lieu of English certificate.*	...	...	...	925	364		
200		Kustore, North District. (Workings North of Kustore and part of Alkusa).		D. Conn, *1st class competency, No. 121, in lieu of English certificate. Authorization, No. 238, to act as manager of more than one mine.*	...	Kilburn & Co., 4, Fairlie Place, or Post Box No. 61, Calcutta.	...	457	101	J. Kean, Agent.	
201		Kustore, South District. (Workings South of Kustore).		J. Kirk, *1st class competency, No. 119, in lieu of English certificate. Authorization, No. 253, to act as manager of more than one mine.*	...	...	...	105	125		
202	Reliance Coal Co., Ld. (See column No. 7).	Mudidih (8 mines).	Mudidih, Sijua, E. I. R.	A. A. V. Sam, *1st class service, No. 48. Authorization, No. 41, to act as manager of more than one mine.*	...	Bird & Co., 101-1, Clive Street, or Post Box No. 46, Calcutta.	...	780	424		

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

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			Bengal-Jharia Coalfield (No. 1 Inspection Circle)—*contd.*							
203	Roy, Bireswar . . . Katrasgarh P. O.	Gansadih . .	Gansadih	Indra Narayn Chandra, *1st class service, No. 89. Authorization, No. 185, to act as manager of more than one mine.*	...	...	...	50	25	
204		Ramkanali . .	Ramkanali, Katrasgarh, E. I. R.	Gosto Behari Mozumdar, *Permit, No. 132.*	...	...	...	25	19	
205		Surataur . .	Jharia Khas, Jharia, E. I. R. .	Pran Krishna Mozumdar, *2nd class service, No. 50.*	...	...	...	67	33	
206	Roy, Moheswar & Srikontho Kusunda P. O.	Gararia . .	Gararia, Kusunda, E. I. R. .	Brojo Kishore Sen, *Permit, No. 144.*	...	...	...	49	40	
207	Royal Coal Co., Ld. . . . (See column No. 7).	Asakuti . .	Asakuti	...	...	...	...	...	...	
208	Sanker, T. R. . . . . Kusunda P. O.	Gararia . .	Gararia, Kusunda, E. I. R. .	Chuni Lal . . .	...	...	...	...	...	
209	Seal, K. B. . . . . Jharia P. O.	Kally Than . . Surataur.	Jharia Khas, Jharia, E. I. R. .	Hari Prafulla Mukherji, *2nd class competency, No. 17.*	...	...	...	105	35	
210	Sendra Coal Co., Ld. . . . (See column No. 7).	Sendra . . (2 mines).	Sendra, Sijua, E. I. R. .	N. Miller, *1st class service, No. 50. Authorization, No. 141, to act as manager of more than one mine.*	...	F. W. Heilgers & Co., 136, Canning Street, or Post Box No. 185, Calcutta.	...	317	112	
211	Sheikh, Brothers & Co. . . Nowagarh P. O.	Dumra Khas .	Dumra	Babua Pandya, *Permit No. 155.*	...	...	...	28	29	
212	Sijua Coal Co., Ld. . . . (See column No. 7).	Sijua . . (17 mines).	Sijua, Sijua, E. I. R. . .	Joseph Miller, *1st class service, No. 80. Authorization, No. 157, to act as manager of more than one mine.*	...	Balmer, Lawrie & Co., 103, Clive Street, or Post Box No. 4, Calcutta.	...	813	677	
213	Singh & Co., Atma . . . Nowagarh P. O.	Khalsa . .	Bodora	Ram Moy Mukherji, *Permit, No. 113.*	...	...	...	5	23	

214	Singh, Bir . . . . Katrasgarh P. O.	Kesalpur (Imperial) (3 mines).	Kesalpur, Katrasgarh, E. I. R.	Mahadeo Lal . .	..	...	...	17	4
215	Singh, Durga Persad . . . Jharia P. O.	Tisra . . .	Tisra, Jharia, E. I. R. . .	Rakhal Das Mukherji, *Permit, No. 167. Authorization, No. 265, to act as manager of more than one mine*	...	...	...	...	...
216	Singh, Gour Mohan . . Baroragarh, Nowagarh P. O.	Mandra Khas .	Mandra	Romesh Chandra Das Gupta. *Permit, No. 111.*	...	...	...	4	7
217	Singh, Jit Narayan and Mit Narayan. Katrasgarh P. O.	Mandra .	Mandra	Sahid Khan . .	...	...	...	14	15
218	Singh, Jorabar . . . . Sijua P. O.	Pandedih . .	Pandedih, Sijua, E. I. R. .	.....	...	...	...	...	...
219	Sinidih Coal Co., Ld. . . . (See column No. 7).	Sinidih . . (3 mines).	Sinidih	John White, *1st class competency, No. 31, in lieu of English certificate. Authorization, No. 180, to act as manager of more than one mine.*	...	Williamson, Magor & Co., 4, Mangoe Lane, or Post Box No. 177, Calcutta.	...	205	62
220	Sinidih Coal Concern . . . Jethmull Bhojraj, No. 4 Dahidatta, Barabazar, Calcutta.	Sinidih . .	Sinidih	Noni Dhon Bhattacharji	...	...	...	100	70
221	Sircar, R. B. . . . . Kusunda P. O.	Kurkend . .	Kurkend, Kusunda, E. I. R. .	Mathura Nath Ghosh, *2nd class service, No. 8.*	...	...	...	95	20
222	Smith, C. J. . . . . (See column No. 7).	Bagdiggi . . (3 mines).	Bagdiggi, Jharia, E. I. R. .	J. W. Murphy, *1st class competency, No. 7. Authorization, No. 150, to act as manager of more than one mine.*	..	Hoare, Miller & Co., 38, Strand Road, or Post Box No. 63, Calcutta.	...	234	254
223	Sowardih Coal Co. . . . (N. L. Gorain and others) Jharia P. O.	Sowardih . .	Sowardih, Jharia, E. I. R. .	Hari Prosanna Ghose, *Authorization, No. 60, to act as temporary manager.*	...	...	...	183	143
224	Srimani, Jogendra Nath . . 90-2, Baranashi Ghose's Street, Calcutta.	Matialla . .	Matialla	Sosi Bhusan Banerji .	...	...	...	...	...

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

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								Below ground.	Above ground.	
			Bengal-Jharia Coalfield (No. 1 Inspection Circle)—*contd.*							
225	Standard Coal Co., Ld. (See column No. 7).	Benahir	Benahir, Jharia, E. I. R.	...	S. B. Banerji	F. W. Heilgers & Co., 136, Canning Street, or Post Box No. 185, Calcutta.	...	450	250	
226		Hariladih	Hariladih, Jharia, E. I. R.	R. C. Barrowman, *1st class competency, No. 24, in lieu of English certificate. Authorization, No. 330 to manage more than one mine.*	...			200	100	
227		Jharia Khas.	Jharia Khas, Jharia, E. I. R.		...	...	...	425	225	
228	Sudamdih Coal Co., Ld. Jharia P. O.	Kurkend	Kurkend, Kusunda, E. I. R.	John Knox, *1st class competency, No. 84, in lieu of English certificate.*	...	N. C. Sircar & Sons, 5, Clive Ghat Street, or Post Box No. 285, Calcutta.	...	312	67	Previously owned by the Jewel Coal Co.
229		Sudamdih	Sowardih, Jharia, E. I. R.	W. T. S. Gibson, *1st class competency No. 103, in lieu of English certificate.*	...		...	116	78	
230	Sudriadih Coal Co., Ld. Nowagarh P. O.	Sudriadih	Sudriadih, Katrasgarh, E. I. R.	W. Combey, *1st class competency, No. 68, in lieu of English certificate. Authorization, No. 256, to act as manager of more than one mine.*	...	Shaw, Wallace & Co., 20, Strand Road, or Post Box No. 70, Calcutta.	...	369	192	
231	Sutikdih Coal Co., Ld. (See column No. 7).	Sutikdih	Sutikdih	H. G. Fleury, *1st class service, No. 35. Authorization, No. 298, to act as manager of more than one mine.*	...	Jardine, Skinner & Co., 4, Clive Row, or Post Box No. 51, Calcutta.	...	50	25	Previously owned by the East Indian Coal Co., Ld., J. J. Turnbull, Agent.
232	Tandabari Coal Syndicate Sijua P. O.	Tandabari (4 mines).	Tandabari	Ras Behari Basu, *Permit, No. 96.*	...	...	...	43	15	
233	Tentulia Colliery Co. Katrasgarh P. O.	Tentulia (6 mines).	Tentulia	Gosto Behary Roy, *2nd class service, No. 124. Authorization, No. 287, to act as manager of more than one mine.*	...	D. N. Ghosh & Bros., North Bantra, Howrah.	...	125	40	E. M. Patterson, Managing Director.

234	Tetturia (New) Coal Co., Ld. Katrasgarh P. O.	Tetturia (6 mines).	Tetturia, Katrasgarh, E. I. R.	T. Walsh, *1st class competency, No. 60, in lieu of English certificate. Authorization, No. 221, to act as manager of more than one mine.*	...	Shaw, Wallace & Co., 20, Strand Road, or Post Box No. 70, Calcutta.	...	556	225	
235	Tetturia (West) Collieries, Ld. (C. M. Carapiet). Katrasgarh P. O.	Tetturia	Tetturia, Katrasgarh, E. I. R.	G. D. Scott, *1st class competency, No. 2. Authorization, No. 297, to act as manager of more than one mine.*	...	...	...	109	75	
236	Titulmuri Coal Co., Ld. Sijua P. O.	Titulmuri (3 mines).	Titulmuri, Sijua, E. I. R.	E. G. Seth Sam, *1st class competency, No. 15. Authorization, No. 42, to act as manager of more than one mine.*	...	.....	...	467	49	C. H. Armstrong, Managing Director.
237	Trigunait, Bhubaneswar Sijua P. O.	Pandedih	Pandedih, Sijua, E. I. R.	Sasi Bhusan Ghosh, *2nd class service, No. 52. Authorization, No. 86, to act as manager of more than one mine.*	...	...	...	...	...	
238	Trigunait, Brindabun, Katrasgarh P. O.	Chandore	Chandore, Sijua, E. I. R.	Rakhal Chandra Roy	...	...	..	3	...	
239	Trigunait, Brojo Bhusan Katrasgarh P. O.	Chandore	Chandore, Sijua, E. I. R.	Hem Chandra Sircar, *Permit, No. 181.*	...	...	...	33	11	
240		Chandore (New)								
241		Ramkanali	Ramkanali, Katrasgarh, E. I. R.	Bisesswar Roy, *Permit, No. 107.*	...	...	...	30	12	
242	Trigunait Brothers Coal Co. Katrasgarh P. O.	Angarpatra	Angarpatra, Sijua, E. I. R.	Mukunda Lall Missra, *2nd class service, No. 163.*	Sitikontha Kabiraj.	...	...	206	108	
243	Trigunait, Mukteswar and Bhubaneshwar. Katrasgarh P. O.	Chandore	Chandore, Sijua, E. I. R.	Sasi Bhusan Ghosh, *2nd class service, No. 52. Authorization, No. 86, to act as manager of more than one mine.*	...	...	...	156	93	
244		Kantapahari	Kantapahari, Sijua, E. I. R.							
245		Pandedih	Pandedih, Sijua, E. I. R.		...	...	...	.		
246	Trigunait, Sudarsan Katrasgarh P. O.	Chandore	Chandore, Sijua, E. I. R.	Sorbeswar Chatterji, *Permit, No. 100. Authorization, No. 47, to act as manager of more than one mine.*	...	...	...	45	5	
247		Chandore (North)	Chandore, Sijua, E. I. R.	Panchanan Tah. *Permit, No. 222.*	...	...	..	...	...	

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

Serial number.	Nme of Owner or Company arranged in alphabetical order, and postal address.	Name of Mine and number of separate Mines, as defined by Rule 27.	Situation of Mine.	Name of Manager, and No. and Class of his Certificate, Authorization or Permit.	Name of Assistant Manager and No. and Class of his Certificate.	Name and address of Managing Agent.	Date of establishment of Special Rules.	Persons employed		Remarks.
								Below ground.	Above ground.	
			Bengal-Jharia Coalfield (No. 1 Inspection Circle)—*concld.*							
248	Tundu Coal Co. (Rahim Khan, Feroz Khan). Katrasgarh P. O.	Tundu	Tundu Katrasgarh, E. I. R.	Rauf Khan	...	...	...	61	24	
249	Union Coal Co., Ld. (See column No. 7).	Angarpatra (6 mines).	Angarpatra, Sijua, E. I. R.	R. Purdy, *1st class service, No. 93, in lieu of English certificate. Authorization, No. 169, to act as manager of more than one mine.*	...	Williamson, Magor & Co., 4, Mangoe Lane, or Post Box No. 177, Calcutta.	...	740	510	
250	Verakotah Syndicate, Ld. Jharia P. O.	Verakotah	Verakotah, Jharia, E. I. R.	L. D'Costa. *Permit, No. 171.*	...	H. J. L. Belletti, Jharia	...	19	25	
251	Vithalram Coal Co. (Dr. G. N. Khan). (See column No. 7).	Bodora	Bodora	Narotam Hari Shunkar, Ojha. *Permit, No. 156.*	...	Dr. G. N. Khan, 33, Canning Street, Calcutta.	...	12	10	
252	Vurma Coal Co. Bankipur P. O., Patna.	Pinalgoria	Pinalgoria	Sankar Singh, *Permit, No. 175.*	...	Jamuna Prasad and Jataram Lal, Katrasgarh P. O.	...	27	4	
253	Walji, Joyram and Mulji Kusunda P. O.	Kusunda (North East).	Kusunda, Kusunda, E. I. R.	Bijoy Kissore Sircar. *Permit, No. 213.*	...	.....	...	...	...	
254	Western India Coal Trading Co. Nowagarh P. O.	Western India	Nudkhurki	Rajendra Lal Sarkar, *2nd class service, No. 166. Authorization, No. 235, to act as manager of more than one mine.*	...	K. Desai & Co., Nadiad P. O., B. B. & C. I. R.	...	63	39	
			Bengal-Raniganj Coalfield (No. 2 Inspection Circle).							
1	Abdul Karim & Bros. Barakar P. O.	Kapasara (25 Bighas plot). No. 1.	Kapasara, Mugma, E. I. R.	Bhaichand Naku. *Permit, No. 183.*	...	...	...	28	4	
2		Kapasara (15 Bighas plot). No. 2.	Kapasara, Mugma, E. I. R.	Ahmed Yusuf. *Permit, No. 142.*	...	...	...	38	5	
3	Adam Joosah & Co. Barakar P. O.	Kapasara	Kapasara, Mugma, E. I. R.	Ashutosh Missra. *Permit, No. 104.*	...	...	...	37	5	
4	Ahmed Yusuf Barakar P. O.	Egarcoor	Egarcoor, Mugma or Barakar, E. I. R.	Trimbaklal Umiashanker Dholakia.	...	...	...	17	5	

5	Aldih Coal Co., Ld. (See column No. 7).	Aldih (3 mines.)	Aldih, Sitarampur, E. I. R.	W. M. Martin, *1st class competency, No. 64, in lieu of English certificate. Authorization, No. 128, to act as manager of more than one mine.*	...	MacNeill & Co., 1/2, Clive Ghat Street, Calcutta, or Post Box No. 15.	...	...	...	
6	Annanpurna Coal Co. (Ram Bandhu Maji and Lachmi Narayan Marwari). Kulti P. O.	Birsingpur	Birsingpur	Gouri Sankar Roy Chowdhury, *2nd class service No. 73.*	...	.....	...	29	21	
7	Badjna Coal Co., Ld. (See column No. 7).	Badjna	Badjna	A. J. Spencer, *2nd class competency, No. 10, in lieu of English certificate.*	...	Planters' Stores and Agency Co., Ld., 3, Mission Row, Calcutta.	...	12	21	Previously owned by Martin.
8	Banerji, Bidhu Sekhar Salanpur P. O.	Sabanpur (3 mines.)	Sabanpur	Gobordhan Banerji, *Permit, No. 97. Authorization, No. 160, to act as manager of more than one mine.*	...	.....	...	18	7	
9	Baraboni Coal Concern, Ld. (See column No. 7).	Chinchuria	Chinchuria, Baraboni or Asansol, E. I. R.	T. Samson, *1st class competency, No. 94, in lieu of English certificate. Authorization No. 301, to act as manager of more than one mine.*	...	N. C. Sircar & Sons, 5, Clive Ghat Street, or Post Box No. 285, Calcutta.	...	351	143	W. Burt, Superintending Engineer.
10		Nuni	Nuni, Sitarampur or Asansol, E.I.R.				...	132	57	
11		Sudih	Sudih	Bhairab Charan Nandi, *2nd class service, No. 68. Authorization, No. 309, to act as manager of more than one mine.*	...		...	158	44	
12	Barakar Brick and Tile Syndicate, Barakar P. O.	Garphalbari	Garphalbari, Mugma, E. I. R.	G. Shearer.* *2nd class service. No. 10.*	...	.....	...	47	15	*Also Managing Director.
13		Gopinathpur	Gopinathpur, Mugma, E. I. R.				...	...	5	
14	Barakar Coal Co., Ld. (See column No. 7).	Alipur	Alipur	F. A. Roberts, *1st class competency, No. 13, in lieu of English certificate.*	..	Bird & Co., 101-1, Clive Street, or Post Box No. 46, Calcutta.	...	37	55	
15		Kumardubi (2 mines).	.....	W. F. Seton-Burn, *1st class service, No. 125. Authorization. No. 168, to act as manager of more than one mine.*						
16	Barakar (West) Coal Co. Barakar P. O.	Mugma	Mugma, Mugma, E. I. R.	Ram Gopal Dey, *Permit, No. 137.*	...	.....	...	39	38	
17	Beerbhum (New) Coal Co., Ld. (See column No. 7).	Belrui	Belrui, Sitarampur, E. I. R.	Amos Lowe, *1st class service, No. 81.*	...	Balmer, Lawrie & Co., 103, Clive Street, or Post Box No. 4, Calcutta.	...	182	135	S. Heslop, Superintendent.
18		Borrea	Borrea, Kulti, E. I. R.	J. G. Maughan, *1st class service, No. 13.*	...		...	730	583	

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

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			Bengal-Raniganj Coalfield (No. 2 Inspection Circle)—*contd.*							
19	Bengal Coal Co., Ld. (See column No. 7).	Chanch	Chanch, Barakar, E. I. R.	W. Forster, *1st class service, No. 12.*	J. Hyde	Andrew Yule & Co., 8, Clive Row, or Post Box No. 150, Calcutta.	...	1,167	604	G. F. Scott, Chief Mining Engineer.
20		Dumarkunda	Dumarkunda, Barakar, E. I. R.							
21		Hatnol	Sanctoria, Barakar, E. I. R.							
22		Laikdih	Laikdih, Barakar, E. I. R.							
23		Sanctoria (2 mines).	Sanctoria, Barakar, E. I. R.	R. S. Davies, *1st class competency, No. 81, in lieu of English certificate. Authorization.*	..		...	567	515	
24		Sitalpur	Sitalpur, Barakar, E. I. R.	A. J. Cooper, *1st class competency. No. 8.*	..		...	565	115	
25		Sodepur	Sodepur, Sitarampur or Barakar, E. I. R.	A. Sheridan, *1st class competency, No. 55, in lieu of English certificate. Authorization, No. 291, to act as manager of more than one mine.*	L. A. Biddle		...	1,210	538	
26	Bengal Imperial Coal Co. Barakar P. O.	Mugma	Mugma, Mugma, E. I. R.	Jadunath Chackerbutty	...	...	...	...	...	
27	Bengal Iron and Steel Co., Ld. (See column No. 7).	Kendwa	Kendwa, Barakar or Kulti, E. I. R.	A. H. M. Paton, *1st class competency, No. 39, in lieu of English certificate. Authorization, No. 139, to act as manager of more than one mine.*	...	Martin & Co., 6 and 7, Clive Street, or Post Box No. 23, Calcutta.	...	76	19	
28		Ramnagar	Ramnagar, Barakar or Kulti, E. I. R.		...		...	253	30	
29	Bengal Nagpur Coal Co., Ld. (See column No. 7).	Gangutia	Gangutia, Barakar, E. I. R.	C. F. H. Armour, *2nd class service, No. 9. Authorization, No. 279, to act as manager of more than one mine.*	...	Andrew Yule & Co., 8, Clive Row, or Post Box No. 150, Calcutta.	...	212	55	

30	Bengal Oriental Coal Co. Barakar P. O.	Kapasara	Kapasara, Mugma, E. I. R.	Mugat Ram Nagar, *Permit, No. 130.*	...	.....	...	41	19	
31	Bhattacharji & Co., U. C. Barakar P. O.	Egarcoor	Egarcoor, Mugma, E. I. R.	Ramanath Dass *Permit, No. 206.*	...	.....	...	56	15	
32	Birsingpur Coal Co. (Abhoya Charan Banerji.) Nirshachati P. O.	Birsingpur	Birsingpur	Ram Nayas Kanji, *Permit, No. 122.*	...	.....	...	25	28	
33	Bonjamari Coal Co. Charanpur P. O.	Bonjamari	Bonjamari, Baraboni or Asansol, E. I. R.	Ram Chandra Mukherji, *Permit, No. 89.*	...	.....	...	36	11	
34	Borari (Eastern) Coal Association, Ld. (See column No. 7).	Egarcoor	Egarcoor, Mugma, E. I. R.	Chandra Sekhor Ganguli, *Permit, No. 190.*	...	R. C. Banerji & Co., 18, Swallow Lane, Calcutta.	...	8	39	
35		Hatbari	Hatbari	Satyendra Nath Ghosh, *Permit, No. 169.*				26	34	
36	Borrea Coal Co., Ld. (See column No. 7).	Salanpur	Salanpur, Salanpur or Sitarampur, E. I. R.	Jas. Mason, *1st class competency, No. 105, in lieu of English certificate.*	...	F. W. Heilgers & Co., 136, Canning Street, or Post Box No. 185, Calcutta.	...	470	67	J. Mackintosh, Superintendent.
37	Brindabonpur Coal Co. (Horogobindo Goswamy, and Kanairam Marwari.) Mugma P. O.	Brindabonpur	Brindabonpur	...	...	.....	...	26	33	
38	Burn & Co., Ld. Raniganj P. O.	Egarcoor	Egarcoor, Mugma, E. I. R.	J. T. Mackenzie, *1st class competency No. 117, in lieu of English certificate.*	...	Burn & Co., 7, Hastings Street, or Post Box No. 191, Calcutta.	...	10	44	
39	Burra Dhemo Coal Co., Ld. (See column No. 7).	Burra Dhemo	Burra Dhemo	A. G. Bennertz, *1st class service No. 78. Authorization, No. 209, to act as manager of more than one mine.*	...	Ernsthausen, Ld., 9, Clive Row, Calcutta.	...	93	111	Previously owned by J. N. Coal Concern. (Raghunandan Prosad).
40	Central India Coal Co. Barakar P. O.	Egarcoor Kalitola	Kalitola, Barakar, E. I. R.	Behari Lal Kabi, *Permit, No. 166.*	...	.....	...	13	4	
41	Chakravarti, Amrita Krishna Nirshachati P. O.	Bhangaband Banga Lakshmi.	Nirshachati	Amrita Krishna Chakravarti.		.....	...	...	...	
42	Charnock Collieries, Ld. (See column No. 7).	Charnock (5 mines).	Sarakdih	A. E. A. Moore, *Permit No. 220. Authorization, No. 331, to act as manager of more than one mine.*	...	Societa Coloniale di Trieste, 134, Canning Street, or Post Box No. 132, Calcutta.	...	43	68	
43	Chatterji Colliery Co. (A. C. Chatterji). 12/4 & 12/5, Pataldanga Street, Calcutta.	Mouthdih	Mouthdih, Sitarampur, E. I. R	Pratul Chunder Chatterji, *Permit No. 248.*	...	.....	...	13	35	
44	Chatterji, Kanailal, and Mitter, Gopal Chander. Chirkunda P. O.	Egarcoor	Egarcoor, Mugma, E. I. R.	Gopal Chander Mitter, *Permit No. 240.*	...	...	...	7	...	

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List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

Serial number.	Name of Owner or Company, arranged in alphabetical order, and postal address.	Name of Mine, and number of separate Mines as defined by Rule 27.	Situation of Mine.	Name of Manager, and No. and Class of his Certificate, Authorization or Permit.	Name of Assistant Manager and No. and Class of his Certificate.	Name and address of Managing Agent.	Date of establishment of Special Rules.	Persons employed		Remarks.
								Below ground.	Above ground.	
			Bengal-Raniganj Coalfield (No. 2 Inspection Circle)—*contd.*							
45	Chatterji, Ram Bandhu . . Dishargarh P. O.	Chota Dhemo .	Chota Dhemo, Sitarampur, E. I. R.	Upendra Nath Laik, *Permit, No. 203.*	...	...	...	25	20	
46	Chatterji, Shashi Bhusan . . 46A, Strand Road, Calcutta.	Khudia . .	Shampur, Mugma, E. I. R. .	Monmotha Nath Chatterji.	...	...	...	35	34	
47	Chhaganlal Nagar . . . Barakar P. O.	Egarcoor . .	Egarcoor, Mugma, E. I. R. .	Ramji Vishram Chanda, *Permit, No. 99.*	...	...	...	16	9	
48	Chirkunda (New) Coal Co. (Jugal Kissor Marwari & others.)	Egarcoor . .	Egarcoor, Mugma, E. I. R. .	Harish Chandra Roy, *Permit, No. 105.*	...	...	..	40	30	
49	Chota Dhemo Coal Co. . . (See column No. 7).	Chota Dhemo .	Chota Dhemo, Sitarampur, E. I. R.	Pravakar Chatterji, *2nd class competency, No. 19. Authorization, No. 224, to act as manager of more than one mine.*	...	M. L. Laik and Banerji, 7, Swallow Lane or Post Box No. 141, Calcutta.	...	80	47	
50	Damra Coal Co., Ld. . . . (See column No. 7).	Nuni . . .	Nuni, Sitarampur or Asansol, E. I. R.	Devendra Narayan Roy, *2nd class service No. 48. Authorization, No. 317, to act as manager of more than one mine.*	...			16	57	
								187	78	
51	Damuda Coal Co., Ld. . . (See column No. 7).	Bamundiha . .	Bamundiha, Sitarampur, E. I. R.	C. H. McCale, *1st class competency, No. 30, in lieu of English certificate. Authorization No. 121, to act as manager of more than one mine.*	J. Delmas .	Balmer, Lawrie & Co., 103, Clive Street, or Post Box No. 4, Calcutta.	...	69	38	
52		Burra Dhemo .	Burra Dhemo . . .					80	33	
53		Gopalpur . .	Gopalpur, Sitarampur, E. I. R.				...	233	129	
54		Lutchipur . .	Lutchipur, Sitarampur, E. I. R.				...	...	...	
55	Daw, U. N., and others . .	Egarcoor . .	Egarcoor, Mugma, E. I. R. .	.....	...	...	...	4	2	
56	Dey, Jugal Kishore, . . . Chirkunda P. O.	Egarcoor . .	Egarcoor, Mugma, E. I. R. .	Ashu Tosh Dey . .	...	...	...	6	15	
57	Dutt, Behari Lall, and Pal, Kali Charan, Nirshachati P. O.	Egarcoor . .	Egarcoor, Mugma, E. I. R. .	Uday Charn Dass, *Permit, No. 189.*	...	...	...			

58	Dutt, Jadab Chandra Barakar P. O.	Mugma	Mugma, Mugma, E. I. R.	Madhab Chandra Dutta, *Permit, No. 197.*	...	...	...	20	10		
59	Dutt Kabra Coal Co. Barakar P. O.	Begunia	Begunia, Barakar, E. I. R.	Nagendra Nath Banerji, *Permit, No. 86.*	...	...	...	31	13		
60		Chattadanga	Egarcoor, Mugma, E. I. R.	Gurupada Bhattacharji, *Permit, No. 233.*	...	...	...	27	4		
61	Dutt, Prasanno Coomar Sitarampur P. O.	Bamundiha	Bamundiha, Sitarampur, E. I. R.	Hari Charan Dutt, *1st class service, No. 24. Authorization, No. 80, to act as manager of more than one mine.*	...	...	...	16	11		
62	East Indian Coal Co., Ld. (See column No. 7).	Agoa	Agoa, Mugma, E. I. R.	Koilas Chandra Banerji, *2nd class service, No. 3.*	...	Jardine, Skinner & Co., 4, Clive Row, or Post Box No. 51, Calcutta.	...	...	...	J. J. Turnbull, General Manager.	
63		Topatand	Topatand	H. W. F. Loughran, *1st class competency, No. 9.*	...						
64	Egarcoor Coal Concern (Ganapat Singh and others). Barakar P. O.	Egarcoor	Egarcoor, Mugma, E. I. R.	Satyendra Nath Ghosh, *Permit, No. 169.*	...	...	...	26	21		
65	Equitable Coal Co., Ld. (See column No. 7).	Chowrasi	Chowrasi, Barakar, E. I. R.	D. Blair, *1st class competency, No. 18.*	...	McNeill & Co., 1/2, Clive Ghat Street, or Post Box No. 15, Calcutta.	...	935	184	W. Miller, Superintendent.	
66		Dishargarh	Dishargarh, Barakar, E. I. R.	W. M. Martin, *1st class competency, No. 64, in lieu of English certificate.*	...		...	1,399	383		
67	Fatka Coal Co. (M. L. Laik; M. G. Chandra and others). Nirshachati P. O.	Fatka or Pandedih	Pandedih, Mugma, E. I. R.	Aswini Kumar Datta. *Authorization, No. 63, to act as temporary manager.*	...	...	...	343	73		
68	Fatka (North), Coal Syndicate. T. L Laik and others. Nirshachati P. O.	Pitakiari	Pitakiari	Himansu Sekhor Mukherji, *Permit, No. 232.*	...	...	...	...	...		
69	Friends Coal Co. (Indra Bhushan Mukherji and Jagabandhu Roy). Nirshachati P. O.	Bandarchooa	Bandarchooa	Kali Kumar Dey, *Permit No. 241.*	...	...	...	...	...		
70	Ganguly, Janendra Nath Sitarampur P. O.	Sudihi	Sudihi, Sitarampur, E. I. R.	Bibhuti Bhusan Ganguli, *Permit, No. 191.*	...	...	...	...	...		
71	Ganguly, Sircar, Roy & Co. Samdi P. O. *Vid* Sitarampur.	Khoirabad	Khoirabad	Debendra Nath Ganguli	...	...	...	7	12		
72	Ghose, Kunja Behari Kulti P. O.	Ketherdih	.....	.....	...	...	...	27	6		
73		Palasia	Palasia	Kunja Behari Ghose	...	...	...	...	...		

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

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								Below ground.	Above ground.	
			Bengal-Raniganj Coalfield (No. 2 Inspection Circle) —*contd.*							
74	Good Hope Coal Co. . . . Kedar Nath Roy and Bhagwan Dass, Munshi Bazar, Asansol P. O.	Birsingpur . .	Birsingpur	Golap Chandar Roy .	...	...	...	19	6	
75	Gorain, Nanda Lall and others . Barakar P. O.	Begunia . .	Begunia, Barakar, E. I. R. .	Rajendra Lal Sarkar .	...	...	...	...	...	Stopped since October 1907.
76	Jafar Yusuf . . . . . Barakar P. O.	Kapasara . .	Kapasara, Mugma, E. I. R. .	Sarbeswar Sen, *Permit, No. 106.*	...	...	...	34	7	
77	Joydurga Colliery Co. . . (*M.* Chugdar and S. K. Mukherji) Nirshachati P. O.	Birsingpur . .	Birsingpur . . .	Satya Kinkar Mukherji	...	...	...	4	11	
78	Kalyaneswari Coal Co. . . Mugma P. O.	Kapasara . .	Kapasara, Mugma, E. I. R. .	Jyotirmoy Konar, *Permit No. 224.*	...	...	...	10	10	
79	Laik, M. L. . . . . 7, Swallow Lane, Calcutta.	Hatnol . .	Hatnol	Baidya Nath Acharjia, *2nd class service, No. 24.*	...	...	...	42	23	
80	Laikdih (South) Coal Concern . Chirkunda P. O.	Jograd . .	Jograd	Kamikhya Nath Ghattack, *2nd class service, No. 18.*	...	...	...	...	...	Previously owned by K. L. Mukherji & Co. and the Baraboni Coal Syndicate.
81	Lalla, Luchman Prosad . . Chirkunda P. O.	Kalimati . .	Kalimati, Barakar or Mugma, E. I. R.	Luchman Prosad Lalla, *Permit, No. 133.*	...	....	...	17	5	
82	Lutchipur Coal Co., Ld. (See column No. 7).	Hatgarooie . .	Hatgarooie	C. R. St. P. Hill, *Permit, No. 138.*	...	.	...	199	150	
83		Lutchipur .	Lutchipur, Sitarampur, E. I. R.	G. N. A. Pitt, *1st class competency, No. 77, in lieu of English certificate. Authorization, No. 320, to act as manager of more than one mine.*	...	... Bird & Co., 101-1, Clive Street, or Post Box No. 46, Calcutta.	...	178	8	E. C. Agabeg, General Manager.
84		Panchgatchia .	Panchgatchia, Sitarampur, E. I. R.	E. L. Barnett, *1st class service, No. 99.*	...		...	351	490	
85	MacNeill & Co. . . . . 1/2, Clive Ghat St., or Post Box No. 15, Calcutta.	Bejdih . . (4 mines).	Bejdih	G. K. Mitchell, *1st class competency, No. 38. Authorization, No. 283, to act as manager of more than one mine.*	...	...	...	71	113	W. Miller, Agent.

86	Mahakharya and Laik Coal Co. Barakar P. O.	Egarcoor (North)	Egarcoor, Mugma, E. I. R.	Purendra Nath Laik, *Permit, No. 246.*	...	...	...	14	6	
87 88	Manbhum (New) Coal Co., Ld. (See column No. 7).	Dhundabad Gopalpur	Dhundabad, Sitarampur, E. I. R. Gopalpur, Sitarampur, E. I. R.	H. L. Wilkinson, *1st class competency, No. 25. Authorization, No. 278, to act as manager of more than one mine.*	...	Octavius Steel & Co., 14, Old Court House Street, or Post Box No. 55, Calcutta.	...	346	138	
89	Marwari, Bireswar Lall Rameswar Salanpur P. O.	Champtoria	Champtoria	.....	...	...	...	...	...	
90	Marwari, J. K. Chirkunda P. O.	Egarcoor	Egarcoor, Mugma, E. I. R.	Ashu Tosh Roy, *Permit, No. 148.*	...	...	..	..	...	
91	Misra, Mangobinda and Roy, Rama Nath. Samdi P. O. *Vid* Sitarampur.	Pahargora	Pahargora	Mangobinda Misra, *Permit, No. 125.*	...	...	...	23	10	
92	Misra, Shama Charan Samdi P. O. *Vid* Sitarampur.	Mahanpur (3 mines).	Mahanpur	Shama Charan Misra, *Permit, No. 103. Authorization, No. 179, to act as manager of more than one mine.*	...	...	...	12	6	
93	Mugma Coal Association (H. M. Banerji), Barakar P. O.	Mugma	Mugma, Mugma, E. I. R.	Jugal Kishore Mukherji. *Permit, No. 135.*	...	...	...	35	27	
94	Mugma Coal Co. Nirshachati P. O.	Mugma	Mugma, Mugma, E. I. R.	Kunja Behari Chandra.	...	...	...	3	1	
95	Mukherji, Baman Dass Dishargarh P. O.	Chota Dhemo	Chota Dhemo, Sitarampur, E. I. R.	Hari Pado Mukherji, *1st class service, No. 55.*	...	...	...	223	90	
96	Mukherji, Tinkari, 9/1, Sircar's Lane, Calcutta.	Dhadkadi	Dhadkadi	Bibhuti Bhusan Ganguli, *Permit, No. 191.*	..	J. L. Banerji & Co., 14, Clive Street, Calcutta.	...	12	28	
97	Mukherji, Umesh Chandra Asansol P. O.	Borachak	Borachak, Borachak, E. I. R.	Raj Ballav Mukherji, *2nd class service, No. 34.*	..	...	...	89	45	
98	Nandi, Maharaja Manindra Chandra. Cossimbazar P. O. Murshidabad.	Begunia	Begunia, Barakar, E. I. R.	Ajodhya Nath Mukherji	...	...	...	...	...	Monmotho Nath Roy, General Manager.
99		Begunia Khas	Begunia, Barakar, E. I. R.	...	...	...	...	132	50	
100	Nodiha Coal Co., Ld. Dishargarh P. O.	Nodiha	Nodiha	A. F. Pennefather, *1st class competency, No. 1.*	...	McNeill & Co., 1/2, Clive Ghat Street, or Post Box No. 15, Calcutta.	...	139	62	W. Miller, Superintendent.
101	Oriental Coal Co., Ld. Asansol P. O.	Joyramchak	Joyramchak	J. J. Marsball, *1st class competency, No. 85, in lieu of English certificate. Authorization, No. 319, to act as manager of more than one mine.*	...	...	...	40	51	
102		Palashdih	Palashdih			Williamson, Magor & Co., 4, Mangoe Lane, or Post Box No. 177, Calcutta.	...	...	...	

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

Serial number.	Name of Owner or Company arranged in alphabetical order, and postal address.	Name of Mine, and number of separate Mines as defined by Rule 27.	Situation of Mine.	Name of Manager, and No. and Class of his Certificate, Authorization or Permit.	Name of Assistant Manager, and No. and Class of his Certificate.	Name and address of Managing Agent.	Date of establishment of Special Rules.	Persons employed		Remarks.
								Below ground.	Above ground.	
			Bengal-Raniganj Coalfield (No. 2 Inspection Circle)—*contd.*							
103	Pal, Raj Mohon, and Chowdhury, S. K. Chirkunda P. O.	Rajpura	Rajpura, Barakar, E. I. R.	Balaram Singh	...	...	...	22	23	
104	Parekh, Keshob Lall Nirshachati P. O.	Sindri	Sindri	Dakhineswar Ghosal, *Permit, No. 136.*	...	...	...	53	4	
105	Patel, Lallu Bhai Chirkunda P. O.	Rajpura	Rajpura Mugma or Barakar, E. I. R.	Lallu Bhai Patel, *Permit, No. 185.*	...	...	...	8	23	
106	Patlabari Coal Syndicate (Mulji Jetha & Chuni Lal).	Patlabari	Patlabari	Romesh Chandra Das Gupta, *Permit, No. 111.*	...	...	...	85	42	
107	Roghunathbatti Syndicate (See column No. 7).	Satais	Burra Dhemo	F. J. Ashcroft, *2nd class service, No. 58. Authorization, No. 310, to act as manager of more than one mine.*	...	Ernsthausen, Ld., 9, Clive Row, Calcutta.	...	...	...	
108	Roy, Abinash Chandra and Murulidhor; and Banerji, Tarini Prosad. Samdi P. O.	Pahargora (New)	Pahargora	Abinash Chandra Roy, *Permit, No. 205.*	...	...	...	9	12	
109	Roy, Ashu Tosh Asansol P. O.	Palasdih	Palasdih Asansol, E. I. R.	.....	...	...	...	77	34	Previously owned by J. K. Roy.
110	Roy, Bireswar Chirkunda P. O.	Egarcoor	Egarcoor, Mugma, E. I. R.	Ashu Tosh Roy, *Permit, No. 148.*	...	...	...	10	3	
111	Roy, Bonowari Lal Barakar P. O.	Kalimati	Kalimati, Barakar or Mugma, E. I. R.	Bonowari Lal Roy, *Permit, No. 108.*	...	...	...	20	4	
112	Roy, Rohini Kumar Barakar P. O.	Kalimati	Kalimati, Barakar or Mugma, E. I. R.	Rohini Kumar Roy, *2nd class service, No. 157.*	...	...	...	9	16	
113	Roy, Singh & Co. (Benodgiri Roy and Ramlochan Singh). Nirshachati P. O.	Birsingpur	Birsingpur	Sambhu Nath Mukherji, *Permit, No. 209.*	...	...	...	7	5	
114	Royal Bengal Coal Co. (Nitambini Dassi). Barakar, E. I. R.	Kusumkanali	Kapasara, Mugma, E. I. R.	Dukha Haran Mukherji, *2nd class service, No. 21.*	...	...	...	140	75	
115	Saltore Coal Co., Ld. (See column No. 7).	Saltore (3 mines).	Saltore, Barakar, E. I. R.	Geo. Dixon, *1st class competency, No. 46, in lieu of English certificate. Author-*	...	Bird & Co., 101-1, Clive Street, or Post Box No. 46, Calcutta.	...	158	134	

				ization, No. 275, to act as manager of more than one mine.							
116	Seal, Aghore Nath . . . Nirshachati P. O.	Sangamahal .	Sangamahal, Mugma, E. I. R.	...	...	...	...	...	...		
117	Seetlah Coal Co., Ld. . . . (See column No. 7).	Seetlah . .	Seetlah	W. Hullock, *1st class service, No. 49. Authorization, No. 214, to act as manager of more than one mine.*	...	Finlay, Muir & Co., Calcutta.	...	8	26		
118	Sett & Co., D. K. Chirkunda P. O.	Egarcoor . .	Egarcoor, Mugma, E. I. R.	Surendra Nath Bandopadhya.	...	...	...	21	9		
119	Sett & Co., Rajani Kanta and others Raniganj P. O.	Egarcoor . .	Egarcoor, Mugma or Barakar, E. I. R.	Panchanan Chakravarti, *Permit, No. 165.*	...	...	...	...	...		
120	Shampur Coal Co., Ld. (See column No. 7).	Bamundiha . .	Bamundiha, Sitarampur, E. I. R.	A. W. Wood, *1st class service, No. 117. Authorization, No. 168, to act as manager of more than one mine.*	...	George Henderson & Co., 100, Clive Street, or Post Box No. 237, Calcutta.	...	691	460		
121		Shampur . .	Shampur, Mugma, E. I. R.								
122		Sundarchak . .	Sundarchak, Sitarampur, E. I. R.		..		...	69	72	Sunderchak and Bamundiha.	
123	Shungamahal Collieries, Ld. . . (See column No. 7).	Sangamahal .	Sangamahal, Mugma, E. I. R.	W. Gorham Smith, *Authorization, No. 47,* to act as temporary manager.	...	Colonial Trading Co. of Trieste, Ld., 134, Canning Street, or Post Box No. 132, Calcutta.	...	108	65		
124	Sircar & Sons, N. C. 5, Clive Ghat Street, or Post Box No. 285, Calcutta.	Khudka . .	Khudka	Sachindranath Bose, *2nd class service, No. 100.*	...	...	...	...	...		
125	Sircar, Bidhu Bhusan . . . Samdi P. O.	Binadikatta .	Binadikatta, Salanpur, E. I. R.	Bidhu Bhusan Sircar, *Permit, No. 109.*	...	...	...	23	31		
126	Sitarampur Coal Co., Ld. (See column No. 7).	Narsamuda . .	Narsamuda, Asansol or Borachak, E. I. R.	W. Howarth, *1st class competency, No. 28. Authorization, No. 318, to act as manager of more than one mine.*	...	Lyall, Marshall & Co., 25, Mangoe Lane, or Post Box No. 6, Calcutta.	...	315	340		
127	Sudihi Coal Co., Ld. . . (See column No. 7).	Morichkotta .	Morichkotta, Sitarampur, E. I. R.	L. A. Jacobs, *1st class competency, No. 37, in lieu of English certificate. Authorization, No. 329, to act as manager of more than one mine.*	...	McLeod & Co., 31, Dalhousie Square, South, or Post Box No. 78, Calcutta.	...				
128		Raghunathbatty .	Raghunathbatty, Sitarampur, E. I. R.				...	300	150		
129		Sudihi . .	Sudihi, Sitarampur, E. I. R.		...	...	...				
130	Suitable Coal Co. . . . (Chhagan Lal Nagar) Barakar P. O.	Egarcoor . .	Egarcoor, Mugma or Barakar, E. I. R.	Joy Chandra Ghose, . *Permit, No. 95.*	...	...	...	24	9		

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

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			Bengal-Raniganj Coalfield (No. 2 Inspection Circle)—*concld.*							
131	Sutikdih Coal Co. (See column No. 7).	Balkuria	Balkuria	H. W. Loughran, *1st class competency, No. 9.*	...	Jardine, Skinner & Co., 4, Clive Row, or Post Box No. 51, Calcutta.	...	...	...	
132	Tarofdar & Co., D. N. Mugma P. O.	Brindaboupur (Model).	Kapasara, Mugma, E. I. R.	Girish Chandra Sircar	...	.....	...	35	16	
133	Umer, Aziz Barakar P. O.	Kapasara	Kapasara, Mugma, E. I. R.	Ganpat Nath Missir, *Permit, No. 141.*	...	.....	...	20	3	
			Bengal-Raniganj Coalfield (No. 3 Inspection Circle).							
1	Adjai Coal Co., Ld. (See column No. 7).	Nandi (2 mines).	Nandi, Jamuria or Raniganj, E. I. R.	Robert Mitchell, *1st class service, No. 2. Authorization, No. 131, to act as manager of more than one mine.*	...	Andrew Yule & Co., 8, Clive Row, or Post Box No. 150, Calcutta.	...	448	280	
2	Apcar & Co. 19, Radha Bazar, Calcutta.	Charanpur (2 mines).	Domohani, Baraboni or Asansol, E. I. R.	E. M. Patterson, *1st class service, No. 4. Authorization, No. 206, to act as manager of more than one mine.*	...	.....	...	212	214	F. J. Agabeg, General Manager.
3	Bagchi, Purna Chandra Kalipahari P. O.	Mosila	Mosila, Kalipahari, E. I. R.	Purna Chandra Bagchi, *2nd class service, No. 51. Authorization, No. 205, to act as manager of more than one mine.*	...	Tansook Roy, Ram Kumar, 12, Mullick Street, Bara Bazar, Calcutta.	..	...	...	
4	Baliram Coal Co. Kalipahari P. O.	Ghusik	Ghusik, Kalipahari, E. I. R.	Ananta Lall Ghosh, *1st class service, No. 115. Authorization, No. 38, to act as manager of more than one mine.*	...	.....	...	172	61	
5		Srikistopur	Kalipahari, Kalipahari, E. I. R.	...	...	.....	...	69	42	
	Bamanband Coal Co., Ld. (See column No. 7).	Bamanband	Bamanband, Toposi, E. I. R.	J. A. Miller, *1st class service, No. 14.*	...	Shaw, Wallace & Co., 20, Strand Road, or Post Box No. 70, Calcutta.	...	36	192	

7	Bamundiha Coal Concern Kalipahari P. O.	Chhatapathar	Chhatapathar, Kalipahari, E. I. R.	...	...	Dwarka Nath Khettry, 89, Cross Street, Calcutta.	...	...	...	Previously owned by H. P. Banker & Co.
8	Banbistopur Coal Association, Asansol P. O.	Banbistopur	Banbistopur, Asansol, E. I. R.	Manindra Nath Chatterji, *2nd class service, No. 175.*	...	Narendra Nath Gupta 77, Swallow Lane, Calcutta.	...	35	24	Previously owned by R. N. Singh.
9	Banerji & Co., J. L. 14, Clive Street, Calcutta.	Kajora	Kajora, Raniganj, E. I. R.	Badha Raman Roy, *Permit, No. 204.*	...	...	...	9	30	Previously owned by H. C. Dutt.
10	Banerji, Haribar Kalipahari P. O.	Ghusik (West)	Ghusik, Kalipahari, E. I. R.	Kashipati Chatterji, *2nd class service, No. 172. Authorization, No. 293, to act as manager of more than one mine.*	Kani Lall Adikheri.	...	...	75	43	
11	Banerji, Kashi Bilash Raniganj P. O.	Jamunakanali	Jamunakanali, Raniganj, E. I. R.	Protap Chandra Topadar, *2nd class service, No. 105.*	...	...	...	...	...	
12	Banerji, Raghu Nath and others Mejia P. O., *vid* Raniganj.	Kalikapur	Kalikapur, Raniganj, E. I. R.		...	...	...	...	...	
13	Bankura Coal Co. (H. H. Banerji and R. C. Mukherji). Kalipahari P. O.	Dobalia	Kalipahari, Kalipahari, E.I.R.	Kashi Pathi Chatterji, *2nd class service, No. 172. Authorization, No. 293, to act as manager of more than one mine.*	...	...	...	31	12	
14	Bansrah Coal Co., Ld. (See column No. 7).	Toposi	Toposi, Toposi or Raniganj, E. I. R.	T. Thomson, *1st class service, No. 57. Authorization, No. 276, to act as manager of more than one mine.*	...	Kilburn & Co., 4, Fairlie Place, or Post Box (No. 61, Calcutta.	...	147	110	Previously owned by the Raniganj Coal Association, Ld.
15	Baraboni Coal Concern, Ld. (See column No. 7).	Baraboni	Baraboni, Asansol or Baraboni, E. I. R.	James Brown, *1st class competency, No. 102, in lieu of English certificate. Authorization, No. 257, to act as manager of more than one mine.*	...	N. C. Sircar & Sons, 5, Clive Ghat Street, or Post Box No. 285, Calcutta.	...	119	72	W. Burt, Superintending Engineer.
16		Haripur	Haripur, Toposi or Raniganj, E. I. R.	Sarat Chunder Dutt, *2nd class service, No. 88.*	...	...	...	135	26	
17		Nimcha	Nimcha, Raniganj, E. I. R.	Pulin Behari Mittra, *2nd class service, No. 56.*	...		...	132	24	
18	Baraboni (New) Coal Co. (Kunja Behari Pal Chowdhuri and others), Charanpur P. O.	Baraboni (New)	Baraboni, Asansol or Baraboni, E. I. R.	Debendra Nath Bhattacharji. *Permit, No. 163.*	...	...	...	1	5	
19	Baraboni (South) Coal Co. (Kunja Behari Pal Chowdhuri), Charanpur P. O.	Baraboni (South)	Baraboni, Asansol or Baraboni, E. I. R.	F. C. Lardner, *2nd class service, No. 90. Authorization, No. 110, to act as manager of more than one mine.*	...	...	...	56	14	

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

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								Below ground.	Above ground.	
			Bengal-Raniganj Coalfield (No. 3 Inspection Circle)—*contd.*							
20	Barakar Coal Co., Ld. (See column No. 7).	Jamgram	Jamgram, Gaurangdi, E. I. R.	A. H. Williams, *1st class competency, No. 115, in lieu of English certificate. Authorization, No. 243, to act as manager of more than one mine.*	...	Bird & Co., 101/1, Clive Street, or Post Box No. 46, Calcutta.	...	691	87	E. C. Agabeg, Superintendent.
21		Kantapahari	Kantapahari, Gaurangdi, E. I. R.	E. G. Nash, *1st class competency, No. 39. Authorization, No. 302, to act as manager of more than one mine.*	...		...	465	135	
22	Basanti Oakdene Coal Co. (See column No. 7).	Basantipur	Mamudpur, Toposi or Raniganj, E. I. R.	B. L. Brodhurst, *1st class competency, No. 38, in lieu of English certificate.*	...	Stanley Oakes & Co., 5, Mangoe Lane, Calcutta.	...	...	...	
23		Mouzra								
24	Beerbhum (New) Coal Co., Ld. (See column No. 7).	Chinchuria (7 mines).	Chinchuria, Baraboni or Asansol, E. I. R.	Charles Lea, *1st class competency, No. 53, in lieu of English certificate. Authorization, No. 118, to act as manager of more than one mine.*	...	Balmer, Lawrie & Co., 103, Clive Street, or Post Box No. 4, Calcutta.	...	183	168	S. Heslop, General Manager.
25		Jairamdanga and Baraboni.	Jairamdanga, Asansol or Baraboni, E. I. R.	A. Russell, *1st class competency, No. 54, in lieu of English certificate. Authorization, No. 67, to act as manager of more than one mine.*	...	...	...	862	400	
26										
27		Banksimulla and Faridpur.	Banksimulla, Asansol, E. I. R.	F. Cooper, *1st class competency, No. 24. Authorization, No. 304, to act as manager of more than one mine.*	...	...	...	140	62	
28										

29	Bengal Coal Co., Ld. (See column No. 7).	Damudapur	Damudapur, Raniganj or Ikra, E. I. R.	A. J. Cooper, *1st class competency, No. 8.*	...	Andrew Yule & Co., 8, Clive Row, or Post Box No. 150, Calcutta.	...	361	243	G. F. Scott, Chief Mining Engineer.
30		Raniganj	Egara, Raniganj, E. I. R.	P. H. Ashcroft, *1st class service, No. 11.*	...	...	...	279	182	
31	Bhagirathi Coal Co. Kalipahari P. O.	Bhutdoba	Kalipahari, Kalipahari, E. I. R.	Kshetra Nath Dey, *Permit, No. 143.*	Pran Gobinda Sirkar.	...	...	30	20	
32	Bhattacharji, Shasi Bhusan Chora P. O.	Haripur	Haripur, Toposi or Raniganj, E. I. R.	Nil Madhab Chakrabutti, *2nd class service, No. 104.*	...	...	...	...	...	
33	Bhuskajuri Coal Co., Ld. (See column No. 7).	Bhuskajuri (2 mines).	Bhuskajuri, Asansol or Baraboni, E. I. R.	H. C. Read, *1st class service, No. 121. Authorization, No. 277, to act as manager of more than one mine.*	Gregory Sam	Bird & Co., 101-1, Clive Street, or Post Box No. 46, Calcutta.	...	280	76	E. C. Agabeg, General Manager.
34	Bilbera Coal Co., Ld. (See column No. 7).	Babisole (3 mines).	Babisole	T. M. Greenshields, *1st class competency, No. 134, in lieu of English certificate. Authorization, No. 290, to act as manager of more than one mine.*	...	N. C. Sircar & Sons, 5, Clive Ghat Street, or Post Box No. 285, Calcutta.	...	46	12	W. Burt, Superintending Engineer.
35		Baraboni	Baraboni, Baraboni or Asansol, E. I. R.	Jas. Brown, *1st class competency, No. 102, in lieu of English certificate. Authorization, No. 257, to act as manager of more than one mine.*	...		...	68	32	Previously owned by Burmon & Co., and then by the Baraboni Coal Association.
36	British India Coal Co., Ld. (See column No. 7).	Napara (3 mines).	Napara, Baraboni or Asansol, E. I. R.	M. J. Adamson, *1st class service, No. 51. Authorization, No. 315, to act as manager of more than one mine.*	...	Williamson, Magor & Co., 4, Mangoe Lane, or Post Box No. 177, Calcutta.	...	90	30	
37	Burdwan Coal Co. (G. B. and B. T. Sircar) Kalipahari P. O.	Mosila	Mosila, Kalipahari, E. I. R.	Promoda Chandra Mukherji. *Permit, No. 215.*	...	...	...	33	19	
38	Burdwan (New) Coal Co. Kalipahari P. O.	Mosila	Mosila, Kalipahari, E. I. R.	Purna Chandra Bagchi, *2nd class service, No. 51. Authorization, No. 205, to act as manager of more than one mine.*	...	...	...	15	9	

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

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								Below ground.	Above ground.	
			Bengal-Raniganj Coalfield (No. 3 Inspection Circle)—*contd.*							
39	Burn & Co. The Potteries, Raniganj P. O.	Pottery (3 mines).	Raniganj, Raniganj, E. I. R.	J. T. Mackenzie, *1st class competency, No. 117, in lieu of English certificate. Authorization, No. 241, to act as manager of more than one mine.*		Burn & Co., 7, Hastings Street, or Post Box No. 191, Calcutta.	...	54	13	
40		Sunkerpur	Sunkerpur	Hem Chand Juggibon Mehta. *Permit, No. 177.*	...	...	...	12	16	
41	Chatterji, Pran Kishen Chowkidanga P. O.	Jotejanaki (2 mines).	Jotejanaki, Toposi or Raniganj, E. I. R.	Nishapati Chatterji, *1st class service, No. 127. Authorization, No. 236, to act as manager of more than one mine.*	...	...	...	102	41	
42	Chelode Coal Co., Ld. (See column No. 7).	Chelode	Kuordih, Kalipahari, E. I. R.	W. Barnard, *1st class competency, No. 26. Authorization, No. 207, to act as manager of more than one mine.*	...	H. V. Low & Co., Calcutta.	...	6	42	
43	Cooverji Bhoja Kalipahari P. O.	Mosila	Mosila, Kalipahari, E. I. R.	Khimji Dhunji *Permit, No. 207.*	...	...	...	25	10	
44	Damra Coal Co., Ld. (See column No. 7).	Damra (Old) (9 mines).	Damra, Kalipahari, E. I. R.	Sasi Bhusan Patra, *2nd class service, No. 33. Authorization, No. 164, to act as manager of more than one mine.*	...	M. L. Laik and Banerji, 7, Swallow Lane, or Post Box No. 141, Calcutta.	...	91	26	
45		Kanchka (2 mines).	Ghusik, Kalipahari, E. I. R.		...	...	...	...	...	
46		Napara	Napara, Baraboni or Asansol, E. I. R.	Devendra Narayan Roy, *2nd class service, No. 48. Authorization, No. 317, to act as manager of more than one mine.*	...	...	...	67	34	
47	Dhadka Coal Co. (Seth Gopal Dass Trikumji) 25, Pollock Street, Calcutta.	Dhadka	Dhadka, Asansol, E. I. R.	Javerilal Kalyanray Dholakia, *2nd class competency, No. 36.*	...	Trikumji, Jiban Das & Co., 25, Pollock Street, Calcutta.	...	...	...	

48	Dobrana (New) Coal Co. (Jagodeb Persad and Basdeb Prosad), Chora P. O.	Dobrana (New).	Dobrana, Topos or Raniganj E. I. R.	Jagodeb Prosad, *Permit, No. 160.*	...	.....	...	8	15		
49	Eastern Coal Co., Ld. (See column No. 7).	Bankola	Bankola, Ukhra or Raniganj, E. I. R.	A. H. Ward, *1st class competency, No. 65, in lieu of English certificate.*	...	Mackinnon, Mackenzie & Co., 16, Strand Road, or Post Box No. 163, Calcutta.	...	250	255		
50		Joba or Jotemotuk	Joba, Raniganj, E. I. R.	W. Augier, *1st class service, No. 66.*	...		...	216	149	A. H. Ward, General Manager.	
51	Equitable Coal Co., Ld. (See column No. 7).	Jamuria	Jamuria, Jamuria, Asansol or Raniganj, E. I. R.	R. Heron, *1st class competency, No. 69, in lieu of English certificate. Authorization, No. 322, to act as manager of more than one mine.*	...	MacNeill & Co., 2, Clive Ghat Street, or Post Box No. 15, Calcutta.	...	782	209	W. Miller, Superintendent.	
52		Satpukuria	Satpukuria, Asansol, E. I. R.	J. DeSouza, *2nd class competency, No. 2.*	...		...	...	...		
53	Faridpur Coal Co. (Soshi Bhusan Mukherji), 6, Fakir Ch. Chuckerbutty's Lane, Beadon Square P. O., Calcutta.	Faridpur	Charanpur, Baraboni or Asansol, E. I. R.	Kanti Chandra Bhattacharji, *2nd class service, No. 111. Authorization No. 316, to act as manager of more than one mine.*	...	Tansookroy Ramnath, 12, Mullick Street, Calcutta.	...	36	10		
54	Ghusik and Muslia Collieries, Ld. (Creet & Co., S. T.), Kalipahari P. O.	Asansol	Asansol, Asansol, E. I. R.	T. Ashley, *1st class competency, No. 129, in lieu of English certificate. Authorization, No. 289, to act as manager of more than one mine.*	...	..	...	68	34		
55		Baraboni	Baraboni, Baraboni or Asansol, E. I. R.	M. A. Creet. *Authorization, No. 16, to manage the mine temporarily.*	...	Martin & Co., 6 & 7, Clive Street, or Post Box No. 23, Calcutta.	...	11	22		
56		Ghusik (3 mines).	Ghusik, Kalipahari, E. I. R.	A. T. Creet, *1st class service, No. 36.*	P. J. Peters and H. A. Creet.		...	72	57	S. T. Creet, General Manager.	
57		Muslia	.....	T. Ashley, *1st class competency, No. 129, in lieu of English certificate. Authorization, No. 289, to act as manager of more than one mine.*	...		...	393	222		
58	Ghusik Coal Co. (Hem Ch. Ghosh). Kalipahari P. O.	Ghusik	Ghusik, Kalipahari, E. I. R.	G. W. Ogilvie	...	.....	...	41	36		
59	G. M. Agreeable Coal Co. Kalipahari P. O.	Kessabganj	Kessabganj, Kalipahari, E. I. R.	Gosto Behary Dutt, *Permit, No. 214.*	...	...	...	...	...		
								34	27		

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

Serial number.	Name of Owner or Company arranged in alphabetical order, and postal address.	Name of Mine, and number of separate Mines as defined by Rule 27.	Situation of Mine.	Name of Manager, and No. and Class of his Certificate, Authorization or Permit.	Name of Assistant Manager and No. and Class of his Certificate.	Name and address of Managing Agent.	Date of establishment of Special Rules.	Persons employed		Remarks.
								Below ground.	Above ground.	
			Bengal-Raniganj Coalfield (No. 3 Inspection Circle)—*contd.*							
60	Hariladih Coal Co., Ld. (See column No. 7).	Akhalpur (6 mines).	Akhalpur, Jamuria, or Raniganj, E. I. R.	G. S. Martin, *1st class competency, No. 133, in lieu of English certificate. Authorization, No. 321, to act as manager of more than mine.*	...	MacNeill & Co., 2, Clive Ghat Street, or Post Box No. 15, Calcutta.	...	204	107	W. Miller, Superintendent.
61	Imperial Coal Co., Ld. (See column No. 7).	Madhubpur (2 mines).	Madhubpur	T. M. Greenshields, *1st class competency, No. 134, in lieu of English certificate. Authorization, No. 290, to act as manager of more than one mine.*	...	N. C. Sircar & Sons, 5, Clive Ghat Street, or Post Box No. 285, Calcutta.	...	85	14	
62	Kajora Coal Co. (P. E. & S. S. Guzadar). Ondal P. O.	Kajora	Kajora, Raniganj, E. I. R.	Surendra Nath Mukerji, *2nd class service, No. 161.*	...	...	...	16	26	
63	Katras-Jharia Coal Co., Ld. (See column No. 7).	Sibpur (4 mines).	Sibpur, Raniganj or Asansol, E. I. R.	P. S. Keelan, *1st class service, No. 34. Authorization, No. 115, to act as manager of more than one mine.*	P. Sydney.	Andrew Yule & Co., 8, Clive Row, or Post Box No. 150, Calcutta.	...	546	147	
64	Kaviraj, Ram Lall Gaurangdi P. O.	Sultanpur	Sultanpur, Churulia, E. I. R.	Kali Dass Chatterji	...	...	...	19	6	
65	Kenda (Central) Coal Co. (J. A. Millar), Chowkidanga P. O.	Kenda	Kenda, Toposi or Raniganj, E. I. R.	J. A. Millar, *1st class service, No. 14. Authorization, No. 225, to act as manager of more than one mine.*		...		40	10	
66	Kenda (New) Coal Co., Ld. Chora P. O.	Kenda (8 mines).	Kenda, Toposi or Raniganj, E. I. R.	H. M. Daly, *1st class service, No. 28.*	...	Balmer, Lawrie & Co. Calcutta.	...	169	130	S. Heslop, Superintendent.
67	Kenda (South) Coal Co. (J. C. Martin). Chowkidanga P. O.	Banakuri	Toposi or Raniganj, E. I. R.	J. C. Martin, *2nd class service, No. 64.*	...	...	...	59	24	
68	Koolustore Coal Co., Ld. (See column No. 7).	Koolustore	Koolustore	A. H. Higby, *1st class service, No. 86. Authorization, No.*	W. F. Bampton.	Begg, Dunlop & Co., 12, Mission Row, or Post Box No. 171, Calcutta.	...	54	88	

				292, *to act as manager of more than one mine.*							
69	Kuordih Coal Co., Ld. (See column No. 7).	Kuordih (4 mines).	Kuordih, Kalipahari, E. I. R.	W. Barnard, *1st class competency, No. 26. Authorization, No. 207, to act as manager of more than one mine.*	...	H. V. Low & Co., Calcutta.	...	115	28	R. Barnard, Superintending Engineer.
70	Kuordih (East) Coal Co., Ld. (See column No. 7).	Kuordih (East)	Kuordih, Kalipahari, E. I. R.	...	...		...	35	44	
71	Laik, Mukundo Lall 7, Swallow Lane, Calcutta.	Haripur	Haripur, Topsi or Raniganj, E. I. R.	Jogendra Nath Chatterji, *2nd class service, No. 50.*	...	...	...	54	10	
72	Lakshmiganj Coal Co., Ld. (See column No. 7).	Lakshmiganj	Dobrana, Toposi or Raniganj, E. I. R.	Annada Prosad Roy. *Authorization, No. 59, to act as temporary manager.*	...	B. Borooah & Co., 8, Hare Street, Calcutta.	...	32	24	Previously owned by Peary Lal Daw.
73	Lodna Coal Co.	Jambad	Jambad, Poraskole, Chora, E. I. R.	A. E. McGrath	...	Turner, Morrison, No. 6, Lyons Range, Calcutta.	...	18	131	Previously owned by R. B. Mukherji & Co.
74	Malia, D. & R. Raniganj P. O.	Jamehari	Jamehari, Raniganj, E. I. R.	Sita Nath Dutta	Rishi Kesh Mukherji.	.....	...	197	82	
75	Malia, R. Raniganj P. O.	Searsol	Searsol, Raniganj, E. I. R.	Mohananda Mukherji, *1st class service, No. 13.*	...	...	...	161	134	
76	Mangalpur Coal Concern (R. B. Dass, Ghose & Co.) Raniganj P. O.	Mangalpur	Mangalpur, Toposi, E. I. R.	Pramatha Nath Guha, *Permit, No. 217.*	...	...	...			
77	Manjhiara Collieries Co. (See column No. 7).	Manjhiara	Manjhiara	W. Lawrie, *1st class competency, No. 78, in lieu of English certificate. Authorization, No. 260, to act as manager of more than one mine.*	...	F. W. Heilgers & Co., 136, Canning Street, or Post Box No. 185, Calcutta.	...	24	86	
78	Martin, J. C. Chowkidanga P. O.	Sitalpur	Sedoli, Ukhra, E. I. R.	Kashi Nath Mukherji *Permit, No. 199.*	...	...	...			
79	Marwari, Fulchand Chowkidanga P. O.	Kenda	Toposi or Raniganj, E. I. R.	Fulchand Marwari, *2nd class service, No. 180.*	...	...	...	27	36	
80		Ghusik (North)	Ghusik, Kalipahari, E. I. R.	Piramal Marwari, *Permit, No. 211.*	...	...	...			
81	Marwari, Ganapat Ram Kalipahari P. O.	Kessabganj	Kessabganj, Kalipahari, E. I. R.	Shew Karan Marwari, *2nd class service, No. 6.*	...	...	...	75	50	
82	Marwari, Harmuk	Ghusik (North)	Ghusik, Kalipahari, E. I. R.	.....	...	...	...			
83	Marwari, Jagannath Raniganj P. O.	Bunbehal	Bunbehal, Ukhra or Raniganj, E. I. R.	Ram Chandra Chatterji	...	...	...	...	...	Closed.
84		Dobrana	Dobrana, Toposi or Raniganj, E. I. R.	Umaprosad Mukherji, *2nd class service, No. 27. Authorization, No. 192, to act as manager of more than one mine.*		...	...	28	32	

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

Serial number.	Name of Owner or Company arranged in alphabetical order, and postal address.	Name of Mine, and number of separate Mines as defined by Rule 27.	Situation of Mine.	Name of Manager, and No. and Class of his Certificate, Authorization or Permit.	Name of Assistant Manager, and No. and Class of his Certificate.	Name and address of Managing Agent.	Date of establishment of Special Rules.	Persons employed		Remarks.
								Below ground.	Above ground.	
			Bengal-Raniganj Coalfield (No. 3 Inspection Circle)—*contd.*							
85	Marwari, Ram Bilas . . . Kalipahari P. O.	Kessabganj . .	Kessabganj, Kalipahari, E. I. R.	Ram Bilas Marwari, *2nd class service, No. 55.*	...		...	17	7	
86	Meyer Coal Co. . . . (See column No. 7).	Jubilee . .	Kalipahari, Kalipahari, E. I. R.	Basanto Kumar Dutta, *2nd class service, No. 70. Authorization, No. 196, to act as manager of more than one mine.*	Babu Lal Tanti. Mahabir Prosad Dass.	Meyer Brothers, 28, Pollock Street, Calcutta.	...	41	6	
87		Nichinta . .	Nichinta, Kalipahari, E. I. R.				...	98	15	
88		Nuniapool . .	Kalipahari, Kalipahari, E.I. R.		...		...	28	3	
89		Nimcha . .	Nimcha, Raniganj, E. I. R. .	Rameswar Mukherji, *Permit, No. 102.*	Girindra Nath Sarcar.					
90	Millar, J. A. . . . . Chowkidanga P. O.	Arrong . .	Arrong, Churulia, E. I. R. .	M. Hussain Bux . . *Permit, No. 179.*	...	...	...	25	11	Previously owned by Mr. A. Whyte.
91	Minto Coal Co., Ld. . . (See column No. 7).	Nandi or Minto No. 2.	Nandi, Jamuria or Raniganj, E. I. R.	C. H. L. Tweedie, *2nd class competency, No. 14. Authorization, No. 140, to act as manager of more than one mine.*	...	Andrew Yule and Co., 8, Clive Row, or Post Box No. 150, Calcutta.	...	57	20	
92		Shekpur or Minto No. 1.	Shekpur, Raniganj, E. I. R.		...	...	...	...	...	P. S. Keelan, General Manager.
93		Sibpur .	Sibpur, Jamuria or Raniganj, E. I. R.	.....	...	...	...			
94	Mukherji, Baman Dass. . . Kalipahari P. O.	Ghusik (New) .	Ghusik, Kalipahari, E. I. R. .	.....	...	...	...	47	58	
95	Mukherji, Romesh Chandra . . Kalipahari P. O.	Ghusik . .	Ghusik, Kalipahari, E. I. R.	Purna Chandra Burmon, *2nd class service, No. 72.*	...	...	...	33	19	
96	Mundulpur Coal Co., Ld. . . (See column No. 7).	Mundulpur .	Mundulpur . . .	G. S. Martin, *1st class competency, No. 133, in lieu of English certificate. Authorization, No. 321, to act as manager of more than one mine.*	...	MacNeill & Co., 1-2, Clive Ghat Street, or Post Box No. 15, Calcutta.	...	13	32	W. Miller, Agent.
97	Nandi Coal Association . . (Siba Prosad and others) Nandi P. O.	Nandi . .	Nandi, Jamuria or Raniganj, E. I. R.	Suchand Ghosh, *2nd class service, No. 44.*	Pasupati Chatterji & Monindro Kinkor Nyak.	..	...	103	29	

98	Nandi, Maharaja Manindra Chandra. Cossimbazar P. O. Murshidabad.	Napara	Napara, Baraboni or Asansol, E. I. R.	Kali Prasanna Punja, *2nd class service, No. 102.*	...	.....	...	114	83	Monmotho Nath Roy, General Manager.
99		Vanora Khas (9 mines).	Vanora, Baraboni or Asansol, E. I. R.	Rajoni Prokash Chakrabarty, *1st class service, No. 112. Authorization, No. 181, to act as manager of more than one mine.*	...	.....	...	133	79	
100	Niga Valley Coal Co. (Soshi Bhuson Mukherji) 6, Fakir Chand Chuckerbutty's Lane, Beadon Square P. O., Calcutta.	Niga Valley (5 mines).	Kalipahari, Kalipahari, E. I. R.	Bepin Behari Mukherji, *2nd class service, No. 176. Authorization, No. 314, to act as manager of more than one mine.*	Beni Madhab Mukherji.	Tansook Roy Ramnath, 12, Mullick's Street, Calcutta.	...	37	29	
101	Ondal Coal Co., Ld. (See column No. 7).	Bowlah	Bowlah, Toposi or Raniganj, E. I. R.	H. T. C. Martin, *1st class service, No. 5.*	...	F. W. Heilgers & Co., 136, Canning Street, or Post Box No. 185, Calcutta.	...	12	62	
102		Chora	Chora, Toposi or Raniganj, E. I. R.				...	233	150	J. MacIntosh, General Manager.
103		Sunpur	Sunpur, Toposi or Raniganj, E. I. R.	A. W. Darby, *1st class competency, No. 87, in lieu of English certificate.*	...	.....	...	55	81	
104	Parasea Collieries, Ld. (See column No. 7).	Parasea	Parasea	J. A. Millar, *1st class service, No. 14. Authorization, No. 225, to act as manager of more than one mine.*	...	Shaw, Wallace & Co., No. 20, Strand Road, or Post Box No. 70, Calcutta.	...	28	243	
105	Phularitand Coal Co., Ld. (See column No. 7).	Banali	Banali	Lal Chand Mukherji, *1st class service, No. 123. Authorization, No. 294, to act as manager of more than one mine.*	...	N. C. Sircar & Sons, 5, Clive Ghat Street, or Post Box No. 285, Calcutta.	...	96	76	R. Barnard, Superintending Engineer.
106		Damra (New)	Damra, Kalipahari, E. I. R.	Kanderpa Mohan Mozumdar, *2nd class competency, No. 21.*			...	75	51	
107	Poniati Coal Concern (U. C. Roy & Co.—A. C. Ghosh). Charanpur P. O.	Faridpur	Domohani, Asansol, E. I. R.	Umesh Chandra Rai, *2nd class service, No. 54.*	Jagad Bhusan Rai Choudhuri.	Woomesh Chander Banerji, 20, Chunapukur Lane, Calcutta.	...	75	44	Previously owned by Apcar & Co.
108	Provincial Coal Co. (E. N. Forbes and P. G. Scott) Asansol P. O.	Ranadanga	Charanpur	E. N. Forbes, *Permit, No. 182.*	...	.....	...	...	...	
109	Raghunathchak Coal Co.	Rag hunathchak	Raghunathchak, Raniganj, E. I. R.	Shama Charan Chatterji, *Permit, No. 162.*		.....	...	...	...	

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

Serial number.	Name of Owner or Company arranged in alphabetical order, and postal address.	Name of Mine, and number of separate Mines as defined by Rule 27.	Situation of Mine.	Name of Manager, and No. and Class of his Certificate, Authorization or Permit.	Name of Assistant Manager, and No. and Class of his Certificate.	Name and address of Managing Agent.	Date of establishment of Special Rules.	Persons employed		Remarks.
								Below ground.	Above ground.	
			Bengal-Raniganj Coalfield (No. 3 Inspection Circle) – *concld.*							
110	Reliance Coal Co., Ld. (See column No. 7).	Charanpur (6 mines).	Domohani, Asansol, E. I. R.	H. M. Tarlton, *1st class competency, No. 124, in lieu of English certificate. Authorization, No. 313, to act as manager of more than one mine.*	R. G. Rooke, *2nd class competency, Nos. 6 and 27*	Bird & Co., 101-1, Clive Street, or Post Box No. 46, Calcutta.	...	248	125	E. C. Agabeg, General Manager.
111	Roy, Dutt & Co. Ondal P. O.	Kajora	Kajora, Raniganj, E. I. R.	Hem Chandra Dutt, *1st class service, No. 24.*	...	...	...	23	29	
112	Royal Coal Co., Ld. (See column No. 7).	Poraskole	Poraskole	T. M. Greenshields, *1st class competency, No. 134, in lieu of English certificate. Authorization, No. 290, to act as manager of more than one mine.*	...	N. C. Sircar & Sons, 5, Clive Ghat Street, or Post Box No. 285, Calcutta.	...	6	18	
113	Sadhu, Kishori Mohun Charanpur P. O.	Palasthal	Jamtara, Jamtara, E. I. R.	Nritya Gopal Sadhu	Tin Kari Rai	...	...	...	...	
114	Sahana & Co. Satya Kinkar Sahana and Karuna Kinkar Sahana Chowkidanga P. O.	Sonachora	Sonachora, Toposi or Raniganj, E. I. R.	Nishanath Rai Chowdhuri. *Permit, No. 236. Authorization, No. 218, to act as manager of more than one mine.*	...	...	...	32	36	
115	Samla and Kendra Syndicate (See column No. 7).	Kendra	Kendra	C. C. Augier, *1st class service, No. 46. Authorization, No. 197, to act as manager of more than one mine.*	...	Martin & Co., 6 & 7, Clive Street, or Post Box No. 23, Calcutta.	...	26	44	
116		Samla	Samla				...	92	121	
117	Santan, Banerji (Indra Nath Banerji) Chowkidanga P. O.	Jotejanaki	Jotejanaki, Toposi or Raniganj, E. I. R.	Pramatha Nath Hazra, *2nd class service, No. 110. Authorization, No. 166, to act as manager of more than one mine.*	...	...	...	67	45	
118		Kenda						8	8	
119	Sathpukuria and Asansol Collieries, Ld. (See column No. 7).	Sathpukuria	Banbistopur, Asansol, E. I. R.	P. G. Vickers, *1st class competency, No. 110, in lieu of English*	...	Martin & Co., 6 and 7, Clive Street, or Post Box No. 23, Calcutta.	...	232	219	

				certificate. Authorization, No. 230, to act as manager of more than one mine.						
120	Sibpur Coal Co., Ld. (See column No. 7).	Pretoria	Sibpur, Jamuria, Asansol or Raniganj, E. I. R.	P. S. Keelan, *1st class service, No. 34. Authorization, No. 115, to act as manager of more than one mine.*	...	Andrew, Yule & Co., 8, Clive Row, or Post Box No. 150, Calcutta.	...	313	44	
121	Singaran Coal Syndicate, Ld. (See column No. 7).	Jotejanaki (3 mines).	Jotejanaki, Toposi, E. I. R.	Harish Chandra Mukherjee, *2nd class service, No. 154.*	...	MacLeod & Co., 31, Dalhousie Square, or Post Box No. 78, Calcutta.	...	137	40	
122	Singh & Co., K. D. Kalipahari P. O.	Kalipahari	Kalipahari, Kalipahari, E. I. R.	Ram Din Lalla . *Permit, No. 147.*	...	.....	...	48	33	
123	Singh, Nauran Kalipahari P. O.	Bhutdoba	Bhutdoba, Kalipahari, E. I. R.	Rameswar Mukherji, *Permit, No. 102.*	Bhovesh Chandra Ghosal.	.....	...	39	23	
124	Sudamdih Coal Co., Ld. (See column No. 7).	Sarthakpur	Sarthakpur, Toposi or Raniganj, E. I. R.	Annada Prosad Bose, *2nd class service, No. 107. Authorization, No. 263, to act as manager of more than one mine.*	..	N.C. Sircar & Sons, 5, Clive Ghat Street, or Post Box No. 285, Calcutta.	...	46	36	W. Burt, Superintending Engineer.
125	Tareni Coal Co. (S. C. Bhatta.) Chora P. O.	Haripur	Haripur, Toposi or Raniganj, E. I. R.	Nilmadab Chuckerbutty, *2nd class service, No. 104.*	...	.....	...	71	11	
126	Toposi (Old) Coal Co. Chowkidanga P. O.	Purandip	Paraudip, Toposi or Raniganj, E. I. R.	Fanindra Nath Ghosh, *2nd class service, No. 153.*	...	.....	...	62	28	
	Bengal-Giridih Coalfield (No. 2 Inspection Circle).									
1	Bayra Coal Association (Myers, E.) Giridih P. O.	Lakharia or Bayra	Lakharia, Giridih, E. I. R.	E. Myers, *1st class service, No. 27. Authorization, No. 195, to act as manager of more than one mine.*	...	.....	...	74	52	
2		Mohalichua	Mohalichua, Giridih, E. I. R.		...	.....	...	83	43	
3		Sikdardih	Sikdardih, Giridih, E. I. R.		...	.....	...	20	22	
4	Bengal Coal Co., Ld. (See column No. 7).	Kuldiha (4 mines).	Kuldiha, Giridih, E. I. R.	T. Chrystle, *1st class competency, No. 25, in lieu of English certificate. Authorization, No. 266, to act as manager of more than one mine.*	...	Andrew Yule & Co., 8, Clive Row, or Post Box No. 150, Calcutta.	...	429	304	G. F. Scott, Chief Mining Engineer.
5	Bengal Giridih Coal Co., Ld. (See column No. 7).	Dhobidih	Dhobidih, Giridih, E. I. R.	H. R. Fox, *1st class service, No. 92.*	...	.....	...	241	227	

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

Serial number.	Name of Owner or Company arranged in alphabetical order, and postal address.	Name of Mine, and number of separate Mines as defined by Rule 27.	Situation of Mine.	Name of Manager, and No. and Class of his Certificate, Authorization or Permit.	Name of Assistant Manager, and No. and Class of his Certificate.	Name and address of Managing Agent.	Date of establishment of Special Rules.	Persons employed		Remarks.
								Below ground.	Above ground.	
			Bengal-Giridih Coalfield (No. 2 Inspection Circle)—*contd.*							
6	Budheadih Coal Co. (Sundermull.) Gadi Shrirampur P.O., Giridih.	Budheadih (2 mines).	Budheadih, Giridih, E. I. R.	Sarbananda Lall, *2nd class service, No. 84. Authorization, No. 133, to act as manager of more than one mine.*	...	.....	...	65	36	
7	East Indian Railway Co. 105, Clive Street, or Post Box No. 225, Calcutta.	Kurhurbari	Kurhurbari, Giridih, E. I. R.	A. Wright, *1st class service, No. 16. Authorization, No. 280, to act as manager of more than one mine.*	...	.....	14th June 1905	1,776	1,133	Dr. W. Saise, Superintendent.
8		Serampur	Serampur, Giridih, E. I. R.	G. C. Lathbury, *1st class competency, No. 13, in lieu of English certificate. Authorization, No. 308, to act as manager of more than one mine.*	...			1,915	1,110	
9	Tah & Co., Rakhal Das	Kabribad (3 mines).	Kabribad, Giridih, E. I. R.	Sarat Chander Tah, *2nd class service, No. 128. Authorization, No. 66, to act as manager of more than one mine.*	...	.....	...	21	6	
			Bengal-Rajmahal Coalfield (No. 3 Inspection Circle).							
1	De, Girish Chandra	Domanpur	Domanpur, Rampurhat, E. I. R.	.....	...	.....	...	...	...	
2		Sarsabad	Sarsabad, Rampurhat, E. I. R.	.....	...	.....	...	6	...	
3	De, Ramani Kanto Rasikpur, Dumka P. O.	Domanpur Balki	Balki, Rampurhat, E. I. R.	Ramani Kanto De	...	.....	...	5		
4		Ghatchora	Asanbani, Rampurhat, E. I. R.		...	.....	...	2		
5	De, Soshi Bhusan Rasikpur, Dumka P. O.	Bargo	Bargo, Rampurhat, E. I. R.	Soshi Bhusan De	...	.....	...	5	...	

			Bengal-Daltonganj Coalfield (No. 1 Inspection Circle).								
1	Bengal Coal Co., Ld. (See column No. 7).	Rajhara (5 mines.)	Rajhara, Daltonganj, E. I. R.	J. N. A. Devine, *1st class service, No. 71. Authorization, No. 170, to act as manager of more than one mine.*	H. G. Piggford	Andrew Yule & Co., 8, Clive Row, or Post Box No. 150, Calcutta.	...	533	399	G. F. Scott, Chief Mining Engineer.
2	Badford, W. T. Debri-on-Sone.	Singra. (3 mines.)	Singra, Daltonganj, E. I. R.		...	...	...	106	102	
			Central Provinces (No. 3 Inspection Circle).							
1	Government of India Nagpur, C. P.	Ballarpur	Ballarpur, Warora, G. I. P.	R. Wordsworth, *1st class competency, No. 22, in lieu of English certificate.*	T. P. Yeoman, *1st class competency, No. 19, in lieu of English certificate.*	...	...	329	127	Chief Engineer, Central Provinces, Agent.
2	Great Indian Peninsula Railway Bombay P. O.	Mohpani	Mohpani, Gadarwada, G. I. P.	F. L. G. Simpson, *1st class competency, No. 32, in lieu of English certificate.*	O. T. Edwards, *1st class competency, No. 51, in lieu of English certificate.*	...	...	781	446	
3	Pench River Coal Co., Ld. (See column No. 7).	Bhajipani	Bhajipani, Chhindwara, B. N. R.	Hugh Wilson	...	...	...	9	13	
4	Pench (Central) Valley Coal Co., Ld. (See column No. 7).	Craddock	Parassia, Chhindwara, B. N. R.	John Brown, *1st class competency, No. 108, in lieu of English certificate.*	...	...	...	53	16	
5	Pench Valley Coal Co., Ld. (See column No. 7).	Barkui	Barkui, Chhindwara, B. N. R.	W. R. Lascelles	...	Shaw, Wallace & Co., 20, Strand Road, Post Box No. 70, Calcutta.	...	293	174	F. I. L. Ditmas, General Manager.
6		Buteria	Buteria, Chhindwara, B. N. R.	R. Fenwick, Jr., *1st class competency, No. 91, in lieu of English certificate. Authorization, No. 153, to act as manager of more than one mine.*	Joseph Rylance, *2nd class competency, No. 1, in lieu of English certificate.*		...	5	4	
7		Chandametta	Chandametta, Chhindwara, B. N. R.	...			...	468	100	
8	Pench (Upper) Valley Coal Co., Ld. (See column No. 7).	Jattachhapper	Jattachhapper, Chhindwara, B. N. R.	T. H. Stafford, *1st class competency, No. 109, in lieu of English certificate.*	...	...	...	25	57	Previously owned by Cooverji Bhoja.

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List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*contd.*

Serial number.	Name of Owner or Company arranged in alphabetical order, and postal address.	Name of Mine, and number of separate Mines as defined by Rule 27.	Situation of Mine.	Name of Manager, and No. and Class of his Certificate, Authorization or Permit.	Name of Assistant Manager, and No. and Class of his Certificate.	Name and address of Managing Agent.	Date of establishment of Special Rules.	Persons employed		Remarks.
								Below ground.	Above ground.	
			British Baluchistan (No. 2 Inspection Circle).							
1	Alibhoy Bros. Quetta P. O.	Sor Range	Sor Range, Quetta, N. W. R.	Alibhoy	...	.....	...	30	...	
2	Asgharali & Co., Abdulla Loralai P. O.	Davispur	Thadri, Loralai	Jawandamull	...	.....	...	...	...	
3	Chand Devomal Khem Quetta P. O.	Sor Range	Sor Range, Quetta, N. W. R.	.....	...	.....	...	10	...	
4	Essaji & Sons Quetta P. O.	Sor Range	Sor Range, Quetta, N. W. R.	...	...		...	15	2	
5	Forozshah, Shiawakshaw Quetta P. O.	Digari	Digari, Quetta, N. W. R.	...	...	.....	...	...	...	
6		Sor Range	Sor Range, Quetta, N. W. R.	Saleh	...	.....	..	...	...	
7	Hossein Ali & Co. Quetta P. O.	Sor Range	Sor Range, Quetta, N. W. R.	Hossein Ali	...	.....	...	30	6	
8	Khan, Bahawal Quetta P. O.	Bhor	Kalat dist.	...	Abdul Khan	.....	...	9	3	
9		Digari	Digari, Quetta, N. W. R.	...		.....	...	12	2	
10	North-Western Railway Lahore P. O.	Khost	Khost, Khost, N. W. R.	A. Mort, *1st class competency, No. 48, in lieu of English certificate.*	...	.....	...	...	...	
11	Patel, K. B. Burjorji D. Quetta P. O.	Mach	Mach, Bolan, N. W. R.	B. D. Patel	...	.....	...	90	19	
12		Sor Range	Sor Range, Quetta, N. W. R.	...	...	.....	...	34	4	
13	Sorabji & Co. Quetta P. O.	Digari	Digari, Quetta, N. W. R.	Mano	...	.....	...	10	8	
14		Leze	Digari, Quetta, N. W. R.	...	...		...	...	...	
15		Sor Range	Sor Range, Quetta, N. W. R.	...	...	.....	...	8	12	
			Burma (No. 1 Inspection Circle).							
1	Burma Mines Development and Agency, Ld. West Moat Road, Mandalay P. O.	Thitchauk	Kalewa, Upper Chindwin	E. Kirkpatrick	...	.....	...	...	...	

Eastern Bengal and Assam (No. 1 Inspection Circle).

1	Assam Railways and Trading Co., Ld. Margherita P. O.	Ledo Valley (East)	Makum, Margherita, D. S. R.	G. Bull, *1st class service, No. 83. Authorization, No. 199, to act as manager of more than one mine.*	..	...	...	159	85	Figures shown with that of East Ledo Valley Mine.
2		Ledo Valley (Upper)			...	...	...			
3		Ledo Valley (West).			...	...	...	...	...	
4		Tirap . . .			...	...	...	35	5	
5		Namdang . .		W. Parsons, *1st class competency, No. 59, in lieu of English certificate. Authorization, No. 305, to act as manager of more than one mine.*	...	...	...	257	171	G. E. Harris, General Manager. P. O. Ward, Agent.
6		Tikak . . .		T. Rushton, *1st class service, No. 84. Authorization, No. 146, to act as manager of more than one mine.*	...	...	...	307	206	
7	Maolong Coal Co. . . .	Maolong . .	Ishamati, Sylhet . . .	...	...	Andrew Yule & Co., 8, Clive Row, or Post Box No. 150, Calcutta.	...	...	...	

Panjab (No. 2 Inspection Circle).

1	Chand, Lakhmi . . . . Ara P. O.	Chhaja . .	Ara, Jhelum . . .	Fakir Chand . . *Permit, No. 159.*	...	...	...	7	7	
2	Dass, Bhagwan and Ram . Kalabagh P. O.	Katha . .	Katha, Dandot, N. W. R. .	Radha Kishan . .	...	Radha Kishan . .	...	...	...	
3		Samewala . .	Tajuwala	...	...	...	...	200	150	
4		Tajuwala . .								
5		Thakkar Kot .						150	150	
6	Dass, Ganesh . . . . Gujrat P. O.	Dher . . .	Manihala, Jhelum . . .	Dost Ali Shah . .	...	...	...	11	3	

List of Coal Mines worked under the Indian Mines Act, 1901, in British India—*concld.*

Serial number.	Name of Owner or Company arranged in alphabetical order, and postal address.	Name of Mine, and number of separate Mines as defined by Rule 27.	Situation of Mine.	Name of Manager, and No. and Class of his Certificate, Authorization or Permit.	Name of Assistant Manager, and No. and Class of his Certificate.	Name and address of Managing Agent.	Date of establishment of Special Rules.	Persons employed		Remarks.
								Below ground.	Above ground.	
			Punjab (No. 2 Inspection Circle)—*contd.*							
								9		
7	Dass, Ishar Pind Dadan Khan P. O.	Dharahi	Mattan Khurd, Jhelum	...	...	...	...	9		
8		Nanak Chand	Rakh Nurpur, Jhelum	...	...	...	...	6		
9		Rodianwali	Sidhandi, Jhelum	Golam Ali *Permit, No. 208.*	...	...	...	7		
10	Dass, Thakur and Ramji Dandot P. O.	Gamrala	Ratoocha, Jhelum	Lakhmi Dass, *2nd class service, No. 149.*	...	...	...	6		
11	Lal & Co., Krishan Jhelum P. O.	Kadi Mithawali	Kadi Mithawali, Jhelum	Mahomed Husain, *2nd class service, No. 150. Authorization, No. 222, to act as manager of more than one mine.*	...	...	...	17	2	
12		Kotianwali	—Jhelum					6		
13		Natanwali	Natanwali, Jhelum					8		
14	Nath, Bhola Dalwal P. O.	Chatterwal	Dalwal, Jhelum	Bhola Nath *Permit, No. 237.*	...	...	...	8		
15		Dherewali	Dalwal, Jhelum					542	360	
16		Wahgroowali	—Jhelum							
17	North-Western Railway Lahore P. O.	Dandot	Dandot, Khewra, N. W. R.	D. Thomson, *1st class competency, No. 50, in lieu of English certificate.*	...	...	...	163	178	E. L. Hope, Superintendent.
18	Punjab Coal Co. (Lakhmi and Deva Singh) Abbottabad P. O.	Chiti Dand	Mukrach, *vid* Golpur, N.W.R.	Kirpa Ram, *2nd class service, No. 32. Authorization, No. 270, to act as manager of more than one mine.*	...	...	...	...	...	
19		Choanwala	Nila, Jhelum	Amir Ali, *2nd class service, No. 137. Authorization, No. 269, to act as manager of more than one mine.*	...	...	...			

20	Ram & Sons, R. S. Rocha, Abbottabad P. O.	Chota Tajuwala	Tajuwala	Uttam Singh	...	...	...	8	8
21		Narianwala	Narianwala	Faquir Chand	...	...	...	50	46
22	Singh & Co., R. B. Anup Lahore P. O.	Makarwal	Mianwalli	S. K. Taylor	Khudabux	Lukshman Singh	...	26	30
23	Singh, Malik Mohan Rawal Pindi P. O.	Nalli	Nalli, Shahpur	Jograj *Permit, No. 195.*	...	...	...	8	...
24	Singh, Soojan Hadali P. O., Shahpur.	Nalli	Nalli, Shahpur	Mull Singh *Permit, No. 218.*	...	...	...	...	..

APPENDIX V—*contd.*

Index to List of Coal Mines worked under the Indian Mines Act, 1901, in British India.

Name of Mine.	Name of Owner or Company.	Serial No. in list.
	Bengal-Jharia Coalfield (No. 1 Inspection Circle).	
Alkusa	Kanga & Co.	122
	Raniganj Coal Association	199
Amlabad	Chota Nagpur, Maharaja Bahadur	59
Angarpatra	Angarpatra Coal Co., Ld.	11
	Angarpatra Colliery Co.	14
	National Coal Co., Ld.	175
	Trigunait Bros. Coal Co.	242
	Union Coal Co., Ld.	249
Angarpatra (North)	North Angarpatra Coal Co. (G. P. Hazra and others)	16
Asakuti	North-West Jharia Coal Syndicate	179
	Royal Coal Co., Ld.	207
Bagdiggi	Bagdiggi-Kujama Collieries, Ld.	21
	Smith, C. J.	222
Bahiardih	Mahato, Baidya Nath	155
Bamongarh	Bamangarah Coal Co., Ld.	23
Bansdeopur	Bansdeopur Coal Co.	27
Bansjora	Bansjora Coal Co.	28
Banstakola	New Beerbhum Coal Co., Ld.	34
Barahmasia	Das, Ram	70
	Gouri Shankar Jagannath & Co.	99
	Kanji Karsan	124
	Polite Barahmasia Coal Co.	192
Barwabera	New Barwabera Coal Co.	33
Belanjabad	Lall, Daroga	150
Benahir	Standard Coal Co., Ld.	225
Bhaga	Jharia Colliery Co., Ld.	112
Bhagaband	Borrea Coal Co., Ld.	48
Bhalgora	Bhalgora Coal Co., Ld.	40
Bhatdih	Bengal Bhatdih Coal Co., Ld.	35
Bhatmurna	A. B. C. Coal Co.	1
Bhowra	East Indian Coal Co., Ld.	82
Bhuggutdih	Bengal Nagpur Coal Co., Ld.	39
Bhulanbarari	Bhulanbarari Coal Co., Ld.	44
	East Indian Coal Co., Ld.	79
Bhuputdih (South)	Katras Bhuputdih Coal Co.	125
Bhutgoria	Aldih Coal Co., Ld.	10
Bilbera	Bilbera Coal Co., Ld.	45
Bodora	Vithalram Coal Co.	251

APPENDIX V—*contd.*

Name of Mine.	Name of Owner or Company.	Serial No. in list.
Bengal-Jharia Coalfield (No. 1 Inspection Circle)—*contd.*		
Borora	Chatterji, Singh & Co.	58
	Gorain, Gopi Nath	96
Brahmanbarari	East Indian Coal Co., Ld.	79
Braroabara	Jharia-Katras Coal Co.	114
Budruchak	Budruchak Coal Mining Co., Ld.	51
Bulliari	Bulliari Coal Co.	52
	Chuni Lal Coal Co.	63
	East Indian Coal Co., Ld.	80
	Khas Jharia and Bulliari Coal Concern	133
Burragarh	Burragarh Coal Co., Ld.	53
	Hariladih Coal Co., Ld.	101
Busserya	Busserya Coal Co., Ld.	54
Chanda	Khandesh, Berar and Gujrat Coal Concern	131
Chandore	Banerji & Co., Harish Chandra	24
	Chandore Coal Co. (B. Roy and others)	55
	National Coal Co. (R. K. Chattoraj)	174
	Pain, B. L.	182
	Trigunait, Brindaban	238
	Trigunait, Brojo Bhusan	239
	Trigunait, Mukteswar and Bhubaneswar	243
	Trigunait, Sudarsan	246
Chandore (New)	Trigunait, Brojo Bhusan	240
Chandore (North)	Trigunait, Sudarsan	247
Chandrabad	Agarwala, Ramjus	8
Chasnalla	Lodna Colliery Co., Ld.	151
Choitodih	Lutchipur Coal Co., Ld.	154
Dhansar	Boga & Co.	47
	Kundu & Co.	144
Dharmuband	Dhurmaband Coal Co.	73
	Ghosh, Akshaya Kumar	90
Dheriajoba	Dheriajoba Coal Co.	72
	Jharia Coal Syndicate, Ld.	111
Dhobakhera	Choudhuri, Satya Taran	60
Dobari	Bagchi, R. N.	20
	Dobari Coal Co. (S. B. Banerji and R. K. Sahana)	74
	Kor, Sri Hari	142
Dumrakhas	Sheik Brothers & Co.	211
Durgapur	Premji and Devshi Hamir	194
Ekra Khas	Nandi, Maharaja Manindra Chandra	172
Emampahari	Jharia Coal Syndicate	110
Ena	North-West Coal Co., Ld.	178

APPENDIX V—*contd.*

Name of Mine.	Name of Owner or Company.	Serial No. in list.
Bengal-Jharia Coalfield (No. 1 Inspection Circle)—*contd.*		
Futtehpur	Agarwala, Ramjus	9
	Dosa & Co., G. K.	76
	Khas Jharia and Bullari Coal Concern	135
	Premji and Devshi Hamir	195
Ganhudih	Dobari Coal Co. (S. B. Banerji and R. K. Sahana)	75
Gansadih	Roy, Bireswar	203
Ganzlatan	New Manbhum Coal Co., Ld.	156
Gararia	Howji, Tribhuban Dass	103
	Ramjidas Bechardas	197
	Roy, Moheswar and Srikontho	206
	Sanker, T. R.	208
Gobindpur	Gobindpur Coal Co., Ld.	91
Gobindpur (South)	South Gobindpur Collieries, Ld.	92
Godhur	Bhattacharji, Ram Nath	42
	Raha and Son, Sasi Bhusan	196
Godhur (Central)	Azam, Masihal	19
Godhur (West)	Agarwala, Lachmi Narayan	7
Goluckdih	East Jharia Coal Co., Ld.	113
Gopalichak	Gopalichak Coal Co., Ld.	94
Gopalichak (West)		95
Hariladih	Equitable Coal Co., Ld.	86
	Standard Coal Co., Ld.	226
Harinachak	Jharia Coal Association	109
Huntodih	Huntodih Coal Co., Ld.	104
Isabella	Isabella Coal Co.	107
Jairamdih	Gorain, N. L. and others	97
Jamadoba	Indian Collieries Syndicate, Ld.	106
Jamna	A. B. C. Coal Co.	2
Jharia (East)	East Jharia Coal Co., Ld.	113
Jharia Khas	Standard Coal Co., Ld.	227
Jinagora	Deoji Goa & Co.	71
	East Barari Coal Co. (Tricumji Jiban Dass)	31
	Gopaldas Trikamji Jivandas	93
	G. P. C. & Co. (Gova Petha)	100
	Jinagarah Coal Co., Ld.	116
Jogta	Agabeg Brothers	3
Joyrampur	B. R. & N. Coal Co.	50
	Joyrampur Coal Co.	118
	Joyrampur Coal Concern (J. K. Mukherji)	119
	Khengarji Triku & Co.	133
	Khimji Moorji & Co.	139
	M. V. A. Coal Concern (M. V. Apcar & Co.)	171

APPENDIX V—*contd.*

Name of Mine.	Name of Owner or Company.	Serial No. in list.
Bengal-Jharia Coalfield (No. 1 Inspection Circle)—*contd.*		
Joyrampur (Lower)	Ghela Panchan & Co.	88
Kally Than Surataur	Seal, K. B.	209
Kandra	Mukherji & Co., K. P.	168
Kandra (Upper)	South Jharia Coal Co.	115
Kankani	Eastern Coal Co., Ld.	83
Kantapahari	Angarpatra Coal Co., Ld.	12
	Angarpatra Colliery Co.	15
	Mondal, Ajodhyaram	163
	National Coal Co., Ld.	176
	South Angarpatra Coal Co. (B. K. Banerji & Son)	17
	Trigunait Mukteswar & Bhubaneswar	244
Kantapahari (West)	Central Bengal Coal Co., Ld.	36
Katras	Nowagarh Coal Co., Ld.	180
Kendwadih	C. M. & Co. (Chimanlal Mangaldas & Keshan Lal Parekh)	65
	East Indian Coal Co., Ld.	81
	Gorain, Ram Ranu	98
	Hariladih Coal Co., Ld.	102
	Kendwadih Coal Co. (Gajadhar Marwari and others)	127
Kesalpur	Bose, J. N.	49
	Koondoo, Sunda Charan	141
Kesalpur (Imperial)	Singh, Bir	214
Kesalpur (New)	Banerji, Bepin Behari	25
Kessurgurah	Kessurgurah Coal Co., Ld.	128
Khaira	East Indian Coal Co., Ld.	80
Khalsa	Singh & Co., Atma	213
Kharkabad	Kharkabad Coal Syndicate	132
Khas Jharia	Agarwala, Jagannath Ramjus	5
	Khas Jharia and Buniari Coal Concern	134
	Khas Jharia Colliery Co.	137
Khas Jharia (New)	Agarwala, Jagannath Ramjus	6
Khas Paredih	Ghosal, Chatterji & Co.	89
Kiska	Kanga & Co.	123
Koradih	C. M. & Co. (Chimanlal Mangaldas and Keshan Lal Parekh)	66
Kujama	Das, L. H.	68
	Khan Brothers	130
	Nanji, Khanji and Sanji	173
	North Kujama Coal Co.	143
Kujama (South)	Bagdiggi-Kujama Collieries, Ld.	22
Kurkend	Central Kurkend Coal Co., Ld.	145
	Khaira Coal Syndicate, Ld.	129
	Kurkend Coal Co. (B. Roy and others)	146
	Motiram Coal Co.	164

APPENDIX V—*contd.*

Name of Mine.	Name of Owner or Company.	Serial No. in list.
Bengal-Jharia Coalfield (No. 1 Inspection Circle)—*contd.*		
Kurkend	Sircar, R. B.	221
	Sudamdih Coal Co., Ld.	228
Kurkend (East)	Marine Coal Co., Ld.	159
Kustore	Raniganj Coal Association, Ld.	200 & 201
Kusunda	K. M. Selected Coal Co.	140
	Kusunda and Nayadi Collieries, Ld.	147
	New Kusunda Coal Co., Ld.	148
	Patel & Co.	188
Kusunda (North East)	Walj, Joyram & Mulji	253
Lakorka	Lakorka Coal Co., Ld.	149
Lakshmi	Commercial Syndicate	67
Lodna	Lodna Colliery Co., Ld.	152
	North Barakar Coal Co.	30
Loyabad	Barakar Coal Co., Ld.	29
Lutipahari	Choudhuri, Satya Taran	61
Madhuband	Jumoni Coal Co., Ld.	120
	Lodna Colliery Co., Ld.	153
Mandra	Mandra Coal Co.	157
	M. B. Co.	158
	Singh, Jit Narayan and Mit Narayan	217
Mandra Khas	Singh, Gour Mohan	216
Matialia	Srimani, J. N.	224
Moheshpur	Moheshpur Coal Co., Ld.	162
Mucheridih	Mucheridih Coal Co., Ld.	166
Mudidih	Reliance Coal Co., Ld.	202
Muraidih	Jetha Gobardhan	108
	Mowji, Ambarsi	165
	National North Barahmasia Coal Co.	177
	Polite Barahmasia Coal Co.	193
Murulidih	Bengal Coal Co., Ld.	37
Muttigurra	Muttigurra Coal Co., Ld.	170
Nichitpur	Parasea Collieries, Ld.	186
Noonoodih	Bengal Iron and Steel Co., Ld.	38
Nudkhurki	Nudkhurki Coal Co.	181
Nudkhurki (East)	Auckland Coal Co., Ld.	18
Pandakanali	Pandakanali Coal Co., Ld.	183
Pandedih	Bhattacharji, U. C.	43
	Choudhuri, Satya Taran	62
	Chuttu Lal Kutchi	64
	Kabiraj, R. C.	121
	Katras Oriental Coal Syndicate	126
	Marwari, Jaharmal and Ram Protab	161

APPENDIX V—*contd.*

Name of Mine.	Name of Owner or Company.	Serial No. in list.
	Bengal-Jharia Coalfield (No. 1 Inspection Circle)—*contd.*	
Pandedih	Mukherji & Co., S. K.	169
	Pandedih Coal Syndicate (Bajrangbali Singh & others)	184
	Singh, Jorabar	218
	Trigunait, Bhubaneswar	237
	Tringunait, Mukteswar and Bhubaneswar	245
Pandeybera	Das, L. H.	69
	Pandeybera Colliery Co.	185
Parbad	East Barari Coal Co. (Tricumji Jiban Dass)	32
Parelgaria	Parelgaria Coal Co.	187
Patharidih	Indian Coal Association	105
Phularibad	Khas Jharia Coal Co.	136
Phularitand	Phularitand Coal Co., Ld.	190
Pinalgoria	Dumra Coal Co.	77
	Ghansham Das Coal Co.	87
	Marwari, Bhagwandas	160
	Vurma Coal Co.	252
Pipratand	Pipratand Coal Co., Ld.	191
Pootki	Eastern Coal Co., Ld.	84
Ramgarh	John & Arratoon	117
Ramkanali	Angarpatra Coal Co., Ld.	13
	Biswas, P. K.	46
	Chandra, Girish Chandra	56
	Dutt, B. L.	78
	Roy, Bireswar	204
	Trigunait, Brojo Bhusan	241
Ranidih	Ranidih Coal Co. (S. B. Chatterji)	198
Sendra	Sendra Coal Co., Ld.	210
Sijua	Sijua Coal Co., Ld.	212
Simlabahal	Bhalgora Coal Co., Ld.	41
Sinidih	Sinidih Coal Co., Ld.	219
	Sinidih Coal Concern	220
Sonalabad	Agarwala, Ghansham Dass	4
Sowardih	Sowardih Coal Co. (N. L. Gorain & others)	223
Sudamdih	Empire Coal Co., Ld.	85
	Sudamdih Coal Co., Ld.	229
Sudriadih	Sudriadih Coal Co., Ld.	230
Surataur	Roy, Bireswar	205
Surataur (New)	Banerji's Coal Concern, J. L.	26
Sutikdih	Sutikdih Coal Co., Ld.	231
Tandabari	Tandabari Coal Syndicate	232
Tasra	Phœnix Coal Co., Ld.	189
Tentulia	Tentulia Colliery Co.	233

APPENDIX V—*contd.*

Name of Mine.	Name of Owner or Company.	Serial No. in list.
Bengal-Jharia Coalfield (No. 1 Inspection Circle)—*concld.*		
Tettulia	Chandra, Haresmal Ram	57
	Mukherji & Co., K. L.	167
Tetturia	New Tetturia Coal Co., Ld.	234
	West Tetturia Collieries, Ld.	235
Tisra	Singh, Durga Persad	215
Titulmuri	Titulmuri Coal Co., Ld.	236
Tundu	Tundu Coal Co.	248
Verakotah	Verakotah Syndicate, Ld.	250
Western India	Western India Coal Trading Co.	254
Bengal-Raniganj Coalfield (No. 2 Inspection Circle).		
Agoa	East Indian Coal Co., Ld.	62
Aldih	Aldih Coal Co., Ld.	5
Alipur	Barakar Coal Co., Ld.	14
Badjna	Badjna Coal Co., Ld.	7
Balkuria	Sutikdih Coal Co.	131
Bamundiha	Damuda Coal Co., Ld.	51
	Dutt, Prasanno Coomar	61
	Shampur Coal Co., Ld.	120
Bandarchooa	Friends Coal Co. (I. B. Mukherji & J. Roy)	69
Begunia	Dutt Kabra Coal Co.	59
	Gorain, Nanda Lall & others	75
	Nandi, Maharaja Manindra Chandra	98
Begunia Khas	Nandi, Maharaja Manindra Chandra	99
Bejdih	MacNeill & Co.	85
Belrui	New Beerbhum Coal Co., Ld.	17
Bhangaband Banga Lakshmi	Chakravarti, Amrita Krishna	41
Binadikatta	Sircar, Bidhu Bhusun	125
Birsingpur	Annapurna Coal Co. (R. B. Maji and L. N. Marwari)	6
	Birsingpur Coal Co. (A. C. Banerji)	32
	Good Hope Coal Co. (K. N. Roy and others)	74
	Joydurga Colliery Co. (M. Chugdar and others)	77
	Roy, Singh & Co.	113
Bonjamari	Bonjamari Coal Co.	33
Borachak	Mukherji, Umesh Chandra	97
Borrea	New Beerbhum Coal Co., Ld.	18
Brindabonpur	Brindabonpur Coal Co. (H. Goswamy and K. Marwari)	37
Brindabonpur (Model)	Tarofdar & Co., D. N.	132
Burra Dhemo	Burra Dhemo Coal Co., Ld.	39
	Damuda Coal Co., Ld.	52
Champtoria	B. L. R. Marwari	89
Chanch	Bengal Coal Co., Ld.	19

APPENDIX V—*contd.*

Name of Mine.	Name of Owner or Company.	Serial No. in list.
Bengal-Raniganj Coalfield (No. 2 Inspection Circle)—*contd.*		
Charnock	Charnock Collieries, Ld.	42
Chattadanga	Dutt Kabra Coal Co.	60
Chinchuria	Baraboni Coal Concern, Ld.	9
Chota Dhemo	Chatterji, Ram Bandhu	45
	Chota Dhemo Coal Co.	49
	Mukherji, Baman Dass	95
Chowrasi	Equitable Coal Co., Ld.	65
Dhadkadi	Mukherji, Tinkari	96
Dhundabad	New Manbhum Coal Co., Ld.	87
Dishargarh	Equitable Coal Co., Ld.	66
Dumarkunda	Bengal Coal Co., Ld.	20
Egarcoor	Ahmed Yusuf	4
	Bhattacharji & Co., U. C.	31
	Burn & Co., Ld.	38
	Chatterji, Kanailal & Mitter, G. C.	44
	Chhaganlal Nagar	47
	Daw, U. N., and others	55
	Dey, Jugal Kishore	56
	Dutt, B. L., and Pal, K. C.	57
	Eastern Borari Coal Association, Ld.	34
	Egarcoor Coal Concern (G. Singh and others)	64
	Marwari, J. K.	90
	New Chirkunda Coal Co.	48
	Roy, Bireswar	110
	Sett & Co., D. K.	118
	Sett & Co., R. K., and others	119
	Suitable Coal Co.	130
Egarcoor Kalitola	Central India Coal Co.	40
Egarcoor (North)	Mahakharya and Laik Coal Co.	86
Fatka or Pandedih	Fatka Coal Co. (M. L. Laik and others)	67
Gangutia	Bengal-Nagpur Coal Co., Ld.	29
Garphalbari	Barakar Brick and Tile Syndicate	12
Gopalpur	Damuda Coal Co., Ld.	53
Gopalpur	New Manbhum Coal Co., Ld.	88
Gopinathpur	Barakar Brick and Tile Syndicate	13
Hatbari	Eastern Borari Coal Association, Ld.	35
Hatgarooie	Lutchipur Coal Co., Ld.	82
Hatnol	Laik, M. L.	79
	Bengal Coal Co., Ld.	21
Jograd	South Laikdih Coal Concern	80
Joyramchak	Oriental Coal Co., Ld.	101

APPENDIX V—*contd.*

Name of Mine.	Name of Owner or Company.	Serial No. in list.
	Bengal-Raniganj Coalfield (No. 2 Inspection Circle)—*contd.*	
Kalimati	Lalla, Luchman Prosad	81
	Roy, Bonowari Lal	111
	Roy, Rohini Kumar	112
Kapasara	Abdul Karim & Brothers	1, 2
	Adam Joosah & Co.	3
	Bengal Oriental Coal Co.	30
	Jafar Yusuf	76
	Kalyaneswari Coal Co.	78
	Umer Aziz	133
Kendwa	Bengal Iron and Steel Co., Ld.	27
Ketherdih	Ghose, Kunja Behari	72
Khoirabad	Ganguly, Sircar, Roy & Co.	71
Khudia	Chatterji, Shashi Bhusan	46
Khudka	Sircar and Sons, N. C.	124
Kumardubi	Barakar Coal Co., Ld.	15
Kusumkanali	Royal Bengal Coal Co.	114
Laikdih	Bengal Coal Co., Ld.	22
Lutchipur	Damuda Coal Co., Ld.	54
	Lutchipur Coal Co., Ld.	83
Mahanpur	Misra, Shama Charan	92
Marich Kotta	Sudihi Coal Co., Ld.	127
Mouthdih	Chatterji Colliery Co. (A. C. Chatterji)	43
Mugma	Bengal Imperial Coal Co.	26
	Dutt, Jadab Chandra	58
	Mugma Coal Association (H. M. Banerji)	93
	Mugma Coal Co.	94
	West Barakar Coal Co.	16
Narsamuda	Sitarampur Coal Co., Ld.	126
Nodiha	Nodiha Coal Co., Ld.	100
Nuni	Baraboni Coal Concern, Ld.	10
	Damra Coal Co., Ld.	50
Pahargora	Misra, Mangobinda and Roy, Rama Nath	91
Pahargora (New)	Roy, A. C., and others	108
Palashdih	Oriental Coal Co., Ld.	102
	Roy, Ashu Tosh	109
Palasia	Ghose, Kunja Behari	73
Panchgatchia	Lutchipur Coal Co., Ld.	84
Pandedih or Fatka	Fatka Coal Co. (M. L. Laik and others)	67
Patlabari	Patlabari Coal Syndicate (Mulji Jetha and Chuni Lal)	106
Pitakiari	North Fatka Coal Syndicate	68
Raghunathbatty	Sudihi Coal Co., Ld.	128

APPENDIX V—*contd.*

Name of Mine.	Name of Owner or Company.	Serial No in list.
Bengal-Raniganj Coalfield (No. 2 Inspection Circle)—*concld.*		
Rajpura	Pal Rajmohan and Chowdhuri, S. K.	103
	Patel, Lallu Bhai	105
Ramnagar	Bengal Iron and Steel Co., Ld.	28
Sabanpur	Banerji, Bidhu Sekhar	8
Salanpur	Borrea Coal Co., Ld.	36
Saltore	Saltore Coal Co., Ld.	115
Sanctoria	Bengal Coal Co., Ld.	23
Sangamahal	Seal, Aghore Nath	116
	Shungamahal Collieries, Ld.	123
Satais	Roghunathbatti Syndicate	107
Seetlah	Seetlah Coal Co., Ld.	117
Shampur	Shampur Coal Co., Ld.	121
Sindri	Parekh, Keshob Lall	104
Sitalpur	Bengal Coal Co., Ld.	24
Sodepur		25
Sudih	Baraboni Coal Concern, Ld.	11
Sudihi	Ganguly, Janendra Nath	70
	Sudihi Coal Co., Ld.	129
Sundarchak	Shampur Coal Co., Ld.	122
Topatand	East Indian Coal Co., Ld.	63
Bengal-Raniganj Coalfield (No. 3 Inspection Circle).		
Akhalpur	Hariladih Coal Co., Ld.	60
Arrong	Miller, J. A.	90
Asansol	Ghusik and Muslia Collieries, Ld.	54
Babisole	Bilbera Coal Co., Ld.	34
Bamanband	Bamanband Coal Co., Ld.	6
Banakuri	South Kenda Coal Co.	67
Banali	Phularitand Coal Co., Ld.	105
Banbistopur	Banbistopur Coal Association	8
Bankola	Eastern Coal Co., Ld.	49
Banksimulla	Bengal Coal Co., Ld.	27
Baraboni	Baraboni Coal Concern, Ld.	15
	Bilbera Coal Co., Ld.	35
	Ghusik and Muslia Collieries, Ld.	55
	New Beerbhum Coal Co., Ld.	26
Baraboni (New)	New Baraboni Coal Co. (K. B. Pal Chowdhuri and others)	18
Baraboni (South)	South Baraboni Coal Co. (K. B. Pal Chowdhuri)	19
Basantipur	Basanti Oakdene Coal Co.	22
Bhuskajuri	Bhuskajuri Coal Co., Ld.	33
Bhutdoba	Bhagirathi Coal Co.	31
	Singh, Nauran	123

APPENDIX V—*contd.*

Name of Mine.	Name of Owner or Company.	Serial No. in list.
Bengal-Raniganj Coalfield (No. 3 Inspection Circle)—*contd.*		
Bowlah	Ondal Coal Co., Ld.	101
Bunbeha	Marwari, Jagannath	83
Charanpur	Apcar & Co.	2
	Reliance Coal Co., Ld.	110
Chattapathar	Bamundiha Coal Concern	7
Chelode	Chelode Coal Co., Ld.	42
Chinchuria	New Beerbhum Coal Co., Ld.	24
Chora	Ondal Coal Co., Ld.	102
Damra (New)	Phularitand Coal Co., Ld.	106
Damra (Old)	Damra Coal Co., Ld.	44
Damudapur	Bengal Coal Co., Ld.	29
Dhadka	Dhadka Coal Co.	47
Dobalia	Bankura Coal Co. (H. H. Banerji and R. C. Mukherji)	13
Dobrana	Marwari, Jagannath	84
Dobrana (New)	New Dobrana Coal Co.	48
Faridpur	Bengal Coal Co., Ld.	28
	Faridpur Coal Co. (S. B. Mukherji)	53
	Poniati Coal Concern (U. C. Roy and A. C. Ghosh)	107
Ghusik	Baliram Coal Co.	4
	Ghusik and Muslia Collieries, Ld.	56
	Ghusik Coal Co. (H. C. Ghosh)	58
	Mukherji, Romesh Chandra	95
Ghusik (New)	Mukherji, Baman Dass	94
Ghusik (North)	Marwari, Fulchand	80
	Marwari, Harmuk	82
Ghusik (West)	Banerji, Harihar	10
Haripur	Baraboni Coal Concern, Ld.	16
	Bhattacharji, Shosi Bhusan	32
	Laik, Mukundo Lall	71
	Tareni Coal Co. (S. C. Bhatta)	125
Jairamdanga	New Beerbhum Coal Co., Ld.	25
Jambad	Lodna Coal Co.	73
Jamehari	Malia, D. and R.	74
Jamgram	Barakar Coal Co., Ld.	20
Jamunakanali	Banerji, Kashi Bilash	11
Jamuria	Equitable Coal Co., Ld.	51
Joba or Jotemotuk	Eastern Coal Co., Ld.	50
Jotejanaki	Chatterji, Pran Kishen	41
	Santan, Banerji (I. N. Banerji)	117
	Singaran Coal Syndicate, Ld.	21
Jotemotuk or Joba	Eastern Coal Co., Ld.	50

APPENDIX V—*contd.*

Name of Mine.	Name of Owner or Company.	Serial No. in list.
	Bengal-Raniganj Coalfield (No. 3 Inspection Circle)—*contd.*	
Jubilee	Meyer Coal Co.	86
Kajora	Banerji & Co., J. L.	9
	Kajora Coal Co.	62
	Roy, Dutt & Co.	111
Kalikapur	Banerji, Raghu Nath and others	12
Kalipahari	Singh and Co., K. D.	122
Kanchka	Damra Coal Co., Ld.	45
Kantapahari	Barakar Coal Co., Ld.	21
Kenda	Central Kenda Coal Co. (J. A. Miller)	65
	Marwari, Fulchand	79
	New Kenda Coal Co., Ld.	66
	Santan, Banerji (Indra Nath Banerji)	118
Kendra	Samla and Kendra Syndicate	115
Kessabganj	G. M. Agreeable Coal Co.	59
	Marwari, Ganapat Ram	81
	Marwari, Ram Bilas	85
Koolustore	Koolustore Coal Co., Ld.	68
Kuordih	Kuordih Coal Co., Ld.	69
Kuordih (East)	East Kuordih Coal Co., Ld.	70
Lakshmiganj	Lakshmiganj Coal Co., Ld.	72
Madhubpur	Imperial Coal Co., Ld.	61
Mangalpur	Mangalpur Coal Concern	76
Manjhiara	Manjhiara Colliery Co.	77
Minto	Minto Coal Co., Ld.	91, 92
Mosila	Bagchi, Purna Chandra	3
	Burdwan Coal Co.	37
	Cooverji Bhoja	43
	New Burdwan Coal Co.	38
Mouzra	Basanti Oakdene Coal Co.	23
Mundulpur	Mundulpur Coal Co., Ld.	96
Muslia	Ghusik and Muslia Collieries, Ld.	57
Nandi	Adjai Coal Co., Ld.	1
	Minto Coal Co., Ld.	91, 92
	Nandi Coal Association	97
Napara	British India Coal Co., Ld.	36
	Damra Coal Co., Ld.	46
	Nandi, Maharaja Manindra Chandra	98
Nichinta	Meyer Coal Co.	87
Niga Valley	Niga Valley Coal Co.	100
Nimcha	Baraboni Coal Concern, Ld.	17
	Meyer Coal Co.	89
Nuniapool	Meyer Coal Co.	88

APPENDIX V—*contd.*

Name of Mine.	Name of Owner or Company.	Serial No in list.
Bengal-Raniganj Coalfield (No. 3 Inspection Circle)—*concld.*		
Palasthal	Sadhu, Kishori Mohun	113
Parasea	Parasea Collieries, Ld.	104
Poraskole	Royal Coal Co., Ld.	112
Pottery	Burn & Co.	
Pretoria	Sibpur Coal Co., Ld.	120
Purandip	Old Toposi Coal Co.	126
Ranadanga	Provincial Coal Co., Ld.	108
Raghunathchak	Raghunathchak Coal Co.	109
Raniganj	Bengal Coal Co., Ld.	30
Samla	Samla and Kendra Syndicate	116
Sarthakpur	Sudamdih Coal Co., Ld.	124
Satpukuria	Equitable Coal Co., Ld.	52
	Satpukuria and Asansol Collieries, Ld.	119
Searsol	Malia, R.	75
Shekpur	Minto Coal Co., Ld.	92
Sibpur	Katras Jharia Coal Co., Ld.	63
	Minto Coal Co., Ld.	93
Sitalpur	Martin, J. C.	78
Sonachora	Sahana & Co.	114
Srikistopur	Baliram Coal Co.	5
Sultanpur	Kaviraj, Ram Lall	64
Sunkerpur	Burn & Co.	40
Sunpur	Ondal Coal Co., Ld.	103
Toposi	Bansrah Coal Co., Ld.	14
Vanora Khas	Nandi, Maharaja Manindra Chandra	99
Bengal-Giridih Coalfield (No. 2 Inspection Circle).		
Bayra or Lakharia	Bayra Coal Association	1
Budheadih	Budheadih Coal Co. (Sundermull)	6
Dhobidih	Bengal Giridih Coal Co., Ld.	5
Kabribad	Tah & Co., Rakhal Das	9
Kuldiha	Bengal Coal Co., Ld.	4
Kurhurbari	East Indian Railway Co.	7
Lakharia or Bayra	Bayra Coal Association	1
Mohalichua		2
Serampur	East Indian Railway Co.	8
Sikdardih	Bayra Coal Association	3
Bengal-Rajmahal Coalfield (No. 3 Inspection Circle).		
Bargo	De, Soshi Bhusan	5
Domanpur	De, Girish Chandra	1
Domanpur Balki	De, Ramani Kanto	3
Ghatchora		4
rsabad	De, Girish Chandra	2

APPENDIX V—*contd.*

Name of Mine.	Name of Owner or Company.	Serial No. in list.
Bengal-Daltonganj Coalfield (No. 1 Inspection Circle).		
Rajhara	Bengal Coal Co., Ld.	1
Singra	Radford, W. T.	2
Central Provinces (No. 3 Inspection Circle).		
Ballarpur	Government of India	1
Barkui	Pench Valley Coal Co., Ld.	5
Bhajipani	Pench River Coal Co., Ld.	3
Buteria	Pench Valley Coal Co., Ld.	6.
Chandametta	Pench Valley Coal Co., Ld.	7
Craddock	Central Pench Valley Coal Co., Ld.	4
Jattachhapper	Upper Pench Valley Coal Co., Ld.	8
Mohpani	Great Indian Peninsula Railway	2
British Baluchistan (No. 2 Inspection Circle).		
Bhor	Khan, Bahawal	8
Davispur	Asgharali & Co., Abdulla	2
Digari	Ferozshah, Shiawakshaw	5
	Khan, Bahawal	9
	Sorabji & Co.	13
Khost	North-Western Railway	10
Leze	Sorabji & Co.	14
Mach	Patel, K. B. B. D.	11
Sor Range	Alibhoy Brothers	1
	Chand, Devonial Khein	3
	Essaji & Sons	4
	Ferozshah, Shiawakshaw	6
	Hossein Ali & Co.	7
	Patel, K. B. B. D.	12
	Sorabji & Co.	15
Burma (No. 1 Inspection Circle).		
Thitchauk	Burma Mines Development and Agency, Ld.	1
Eastern Bengal and Assam (No. 1 Inspection Circle).		
Ledo Valley (East)	Assam Railways and Trading Co., Ld.	1
Ledo Valley (Upper)	Assam Railways and Trading Co., Ld.	2
Ledo Valley (West)	Assam Railways and Trading Co., Ld.	3
Maolong	Maolong Coal Co.	7
Namdang	Assam Railways and Trading Co., Ld.	5
Tikak	Assam Railways and Trading Co., Ld.	6
Tirap	Assam Railways and Trading Co., Ld.	4

APPENDIX V—*concld.*

Name of Mine.	Name of Owner or Company.	Serial No. in list.
	Punjab (No. 2 Inspection Circle).	
Chatterwal	Nath, Bhola	14
Chhaja	Chand, Lakhmi	1
Chiti Dand	Panjab Coal Co.	18
Choanwala	Panjab Coal Co.	19
Chota Tajuwala	Ram & Sons, R. S. Rocha	20
Dandot	North-Western Railway	17
Dharahi	Dass, Ishar	7
Dher	Dass, Ganesh	6
Dherewali	Nath, Bhola	15
Gamrala	Dass, Thakur & Ramji	10
Kadi Mithawali	Lal & Co., Krishan	11
Katha	Dass, Bhagwan and Ram	2
Kotianwali	Lal & Co., Krishan	12
Makarwal	Singh & Co., R. B. Anup	22
Nalli	Singh, Malik Mohan	23
Nalli	Singh, Soojan	24
Nanak Chand	Dass, Ishar	8
Narianwala	Ram & Sons, R. S. Rocha	21
Natamwali	Lal & Co., Krishan	13
Rodianwali	Dass, Ishar	9
Samewala	Dass, Bhagwan and Ram	3
Tajuwala	Dass, Bhagwan and Ram	4
Thakkar Kot	Dass, Bhagwan and Ram	5
Wahgroowali	Nath, Bhola	16

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Department of Mines, India.

REPORT

OF THE

CHIEF INSPECTOR OF MINES IN INDIA

Under the ndian Mines Act (VIII of 1901)

FOR THE

YEAR ENDING 31st DECEMBER

1909

LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC SOCIETY

BY

J. R. R. WILSON, M. I. C. E., F. G. S.

Chief Inspector of Mines in India

CALCUTTA

SUPERINTENDENT GOVERNMENT PRINTING, INDIA

1910

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FROM

J. R. R. WILSON, ESQ., M.I.C.E., F.G.S.,
Chief Inspector of Mines in India,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
DEPARTMENT OF COMMERCE AND INDUSTRY,
SIMLA (*Panjab*).

Dated Dhanbaid, 10th June, 1910.

SIR,

I have the honour to submit the report upon the inspection of mines in British India for the year ending 31st December 1909.

EXPLANATORY INTRODUCTION.

It is necessary to explain that this is a report relating entirely to the administration of the Indian Mines Act, 1901, and is not a complete statistical review of Indian Mining and analogous industries.

No official publication embodying such statistics is at present issued for India, but a review of the mineral productions of India in the form of a Quinquennial Review by the Director of the Geological Survey of India will be issued this year. Figures for Mysore, where most of the Indian gold is raised, are given in the Report of the Chief Inspector of that Native State, and mineral statistics may also be found in the administrative reports of the various Presidencies, Provinces and States of India.

It should be remembered in reading the statistics that there must be a considerable output from quarries which are under 20 feet deep ; and owing to the exclusion of such places from the scope of the Mines Act these figures should not be regarded as a complete index to the production of the mineral wealth of the country.

The report is divided into five sections, *viz.* :—

Section I.—Persons employed.
„ II.—Output of mineral.
„ III.—Accidents.
„ IV.—Prosecutions, discipline and additions to the Act.
„ V.—General Remarks.

Section I.—Persons employed.

During the year 1909 the average number of persons working in and about the mines regulated by the Indian Mines Act, was 140,710 of whom 90,495 worked underground and 50,215 on the surface ; 88,885 of the persons were adult males, 47,487 adult females and 4,338 children under 12 years of age. For the first time since the Indian Mines Act came into force a decrease in the number of workers has to be recorded, and compared with last year, this decrease amounts to over 14 per cent. or 23,591 workers.

This decrease is not accounted for by a slackness in trade in any one particular mineral but is due apparently to a wave of industrial depression which swept over the country last year and has yet not entirely receded.

It is true that nearly half of this reduction is connected with coal mining but the percentage is not more than 9 compared with the figures of 1908.

The mica-industry has suffered more than any other, the figures being 15,277 for 1908 and only 9,865 for last year : a startling reduction of 35 per cent.

Manganese is only one per cent. behind mica, the figures for 1908 being 16,416 and for 1909 10,795 or a reduction of 34 per cent. Although the workers in the manganese mines have decreased as a whole so enormously, this does not reflect the state of the industry in every part of India, for in the Bombay Presidency there is a distinct shortage of labour. The only minerals which have an increase of workers are gold and slate. Naturally the labour question is not now acute, but a revival in the coal trade, and signs are not wanting that the tendency is in the right direction, would very soon absorb all the labour available.

Section II.—Output of mineral.

Reference to the tables given in Appendix II will show that there has been a decrease in the output of every kind of mineral excepting gems and salt.

COAL.

The coal trade last year received a decided set back ; the demand was by no means equal to the supply, and until collieries were able to adjust themselves to the situation, stocks steadily accumulated all over the coal fields. These stocks are only now disappearing. The state of trade was reflected in the published value of coal properties which shrunk enormously and many unfortunate speculators found that coal could burn the fingers.

In spite of the slump in values, the industry to-day is probably in a healthier condition than it was two years ago ; the fever has departed ; many weak members which should never have been allowed to grow, have been excised, and, with normal conditions, a steady and profitable future is bound to supervene.

Owing to the labour troubles in Australia, Indian coal had an opportunity of entering new markets. If the shipments contained nothing but clean and carefully selected coal many of these new channels should remain open.

The output for last year was 11,294,227 tons, which compared with 12,142,020 tons for 1908 shows a decrease of 7 per cent.

Of the total 10,660,811 tons or 94 per cent. were raised in Bengal ; practically the same ratio as of the previous year. The reduction therefore has taken place in the Bengal coalfields and principally in Jharia. The Central Provinces area on the other hand has increased its output by 10 per cent. and Assam and Baluchistan have also made progress to the extent of 11 per cent. and 16 per cent. respectively.

MICA.

The output of mica has decreased by 709 tons or 30 per cent. ; the falling off applying to all the producing districts in about equal proportions.

The Hazaribagh mica tract must be one of the richest mica deposits in the world, but unfortunately mining has been conducted with utter disregard for the future, the method adopted being simply to follow the line of least resistance, which does not always lead to ultimate success. Where fairly productive veins are outcropping at the surface, they are worked down as long as the yield is good, the water question not burdensome, and the labour ample to raise the material cheaply by hand. Should any alteration appear in anyone of these conditions, the mine is abandoned, either becoming waterlogged or covered with debris ; the site of the vein itself often being obliterated so that no encouragement is offered to any future worker. It would appear that the only way to safeguard the mineral is to impose restrictions as to working upon lease holders.

MANGANESE ORE.

The manganese industry has continued the retrograde movement which set in at the end of 1907. The decrease of output is 137,737 tons; the figures for last year being 357,205 tons as against 494,942 tons for 1908.

This is a great falling away from the highwater mark recorded in 1907 when the output was 642,082 tons. Indian manganese is a very high grade ore, which is not costly to mine, and must always command a market excepting during the times of unusual depression.

GEMS.

The output of gems from Burma has materially increased during 1909; the total was 265,010 carats while the previous year's output only reached 211,194 carats. The output is entirely from the Mogok mines of the Burma Ruby Mines, Limited.

GOLD.

The output of gold has again decreased, the figures for 1909 being 5,615 ozs. as against 7,242 for 1908. This is all from the Dharwar gold field. The outlook however is not even as promising as the figures would indicate, as notices have been received to the effect that some of the principal mines were closed down at the end of the year. Work was also carried on in the Anantapur gold field, but no ore was crushed during the year.

OTHER MINERALS.

Tin, all of which is mined in Burma, has very considerably increased, although the total output is still only 1,520 cwts.

Chromite from Baluchistan has dropped to half the quantity produced in 1908, and Magnesite which is mined in the Madras Presidency has dropped to one-tenth of the production of 1908.

Limestone also, which in 1908 was 101,569 tons has fallen in 1909 to 56,502 tons. This practically all comes from the Katni quarries near Jabalpur. During the year twenty separate mines were worked; some of the mines comprise several quarries. Work is not carried on continuously throughout the year, but during the monsoon there is a complete stoppage, and it takes some time to pump the mines dry. Many owners indeed use no pumps but bail out the water by coolie labour. Others wait until May and June by which time much of the water has been evaporated by the sun's heat.

Section III.—Accidents.

GENERAL REMARKS.

During the year 1909 at mines regulated by the Indian Mines Act, 1901, there were 126 fatal accidents involving the loss of 152 lives, being a decrease of 42 as compared with the number of lives lost in the previous year.

The figures although not wholly satisfactory are an improvement upon those of 1908. The death rate per 1,000 persons employed was 1·08 whereas the year before the rate was 1·18.

At coal mines only the death rate per million tons raised was 10·53 while in 1908 it reached to 13·49. Even though a reduction is shown, the figures are still much too high. There is no questioning the fact that greater discipline would very substantially lessen this loss of life. A glance at the list of falls of roof and side, shows very clearly that the Indian miner has a great deal to learn in the way of taking care of himself, and, he must be taught how to do it.

Of the persons killed 131 were males and 21 females. In addition to these deaths fatal accidents to 29 persons who were not engaged at the mines were reported.

A list of these appears in Appendix I, and reasons are given for their exclusion from the statistical tables. The deaths occurring in each mineral working were as follows :—

119 in coal ; 7 in mica ; 6 in manganese ; 1 in chromite ; 2 in ruby ; 2 in slate ; and 15 in gold. Of the persons killed 6 lost their lives by explosions of firedamp ; 57 by falls of roof and side ; 30 in shafts ; 5 by explosives ; 16 by haulage ; 13 by other accidents below ground and 25 on the surface.

Each fatal accident is briefly described in Appendix I, but the following additional remarks and explanations are necessary.

EXPLOSIONS OF GAS.

Unfortunately there are three accidents to be chronicled under this heading. The possibilities attending such occurrences are always very much greater than the results : so far, coal dust has not played a very important part in connection with these disasters, but its danger is well known and current mining literature is full of information on the subject. Year by year, managers are being warned that as the cover over the seams increases in thickness gas is likely to be found. They cannot escape the responsibility devolving upon them of providing against the contingency.

No. 1 in the list which happened at the Bengal Coal Company's Sitalpur mine in the Dishargarh seam was due to laxity on the part of the sirdar immediately in charge of that part of the mine, and to the disobedience of the workmen concerned.

This explosion occurred in a 4 feet square main gallery which had been driven into the solid coal, a distance of 100 feet from the last connection. The presence of gas was suspected by the sirdar when he made his inspection five hours before : although he carried a safety lamp, he did not test for it, but suspected its presence by reason of the gallery being warmer than usual. Instead of fencing the place off as he should have done he went out into the haulage road close by and warned the work people there. The deceased's companions had worked on the previous day in a gallery near to this one and were proceeding to the same place when they were met and warned of the danger by the sirdar. Although they were told not to go to their old place, two men disobeyed the instructions and taking a naked light went in and so ignited the gas and were severely burnt ; one of them fatally. They thought they would see if there was any loose coal.

When the Inspector of Mines visited the place two days later he found gas extending from the head end to a distance of 30 feet out, and no ventilation in the gallery. One of the assistants assured him that he frequently found gas in this part of the mine and cleared it away by sending in the miners to waft it out with their clothes. There is nothing very modern about this procedure, and I hope it has only to be mentioned to be condemned.

Galleries, and especially galleries likely to produce inflammable gas, must be efficiently ventilated. In this case the precaution had been taken to work the place with safety lamps.

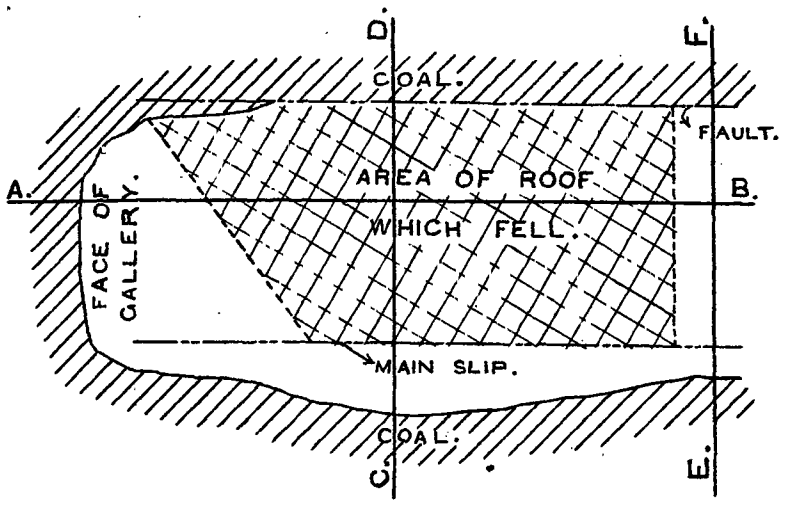
No. 2 in the list which occurred at the Assam Railways and Trading Company's Upper Tikak Mine, Assam, is classed as an explosion because the effects were such as an explosion usually produces. The main seam here lies at an angle of about 40 degrees and is separated into top coal 23 feet 6 inches thick, a 10 feet parting of fireclay and middle and bottom coals with partings up to 52 feet thick.

To add to the difficulties of working such steep and thick seams, the coal is tender and liable to spontaneous combustion. As soon as a small area has been goafed it has to be carefully dammed off. Smoke was noticed issuing from one district of the mine and the sirdar Felu, who was fetched to the place, promptly sent everyone out of that part of the mine down to the main intake airway, and his action doubtless saved many lives : it is much to be regretted that he subsequently lost his own life. Later when the smoke seemed to have receded up a self-acting incline Felu and two others went up to ascertain the source of the fire. While they were resting at this point a blast of flame reached them and burnt them so severely that they ultimately died.

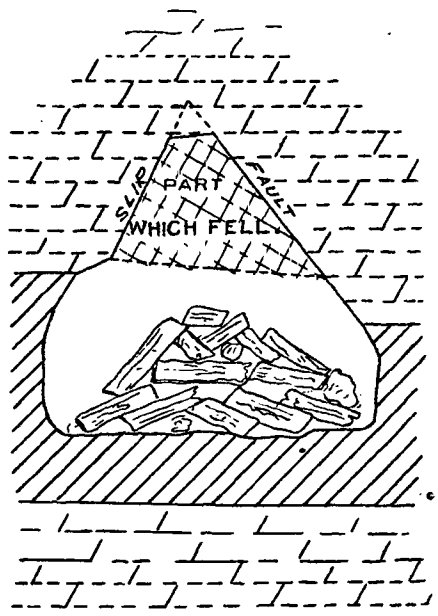
PLAN & SECTIONS

OF THE PLACE WHERE FOUR MEN WERE KILLED BY A FALL OF ROOF AT DHOBIDIH COLLIERY ON 12TH MAY 1909.

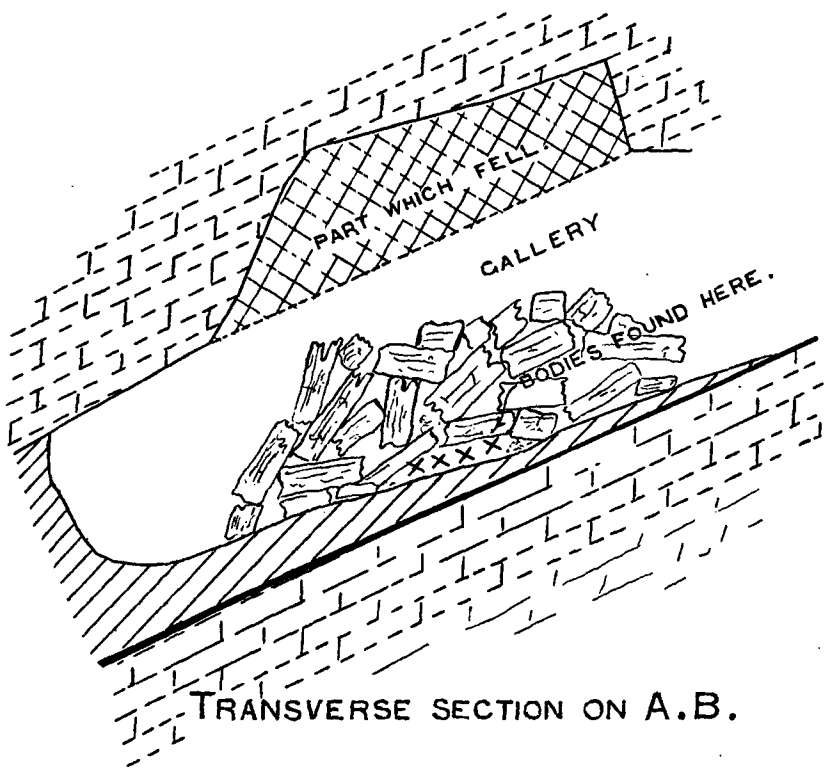
SCALE 1 INCH=8 FEET.



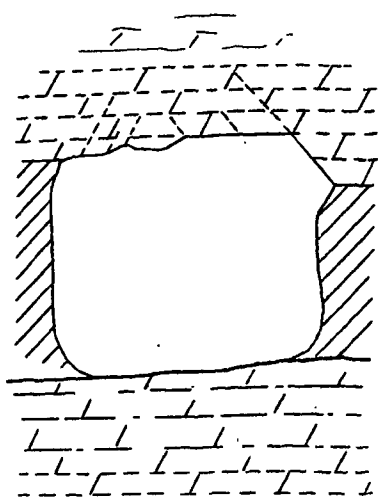
PLAN



SECTION ON C. D.



TRANSVERSE SECTION ON A.B.



SECTION ON E.F.

Reg. No. 1852 E., 09.—V.—1,2 0

Subsequent investigation showed that an old fire in a goaf had burnt through a dam, and that the blast had burst or shaken out two air crossings within a distance of 200 feet of the dam. Gas has never been seen in the mine and naked lights only were used. It is hardly likely that generated carbon monoxide reached the explosive point and became ignited. The explanation is probably a much simpler one. Air-blasts from falls of roof have been known of such force as to remove heavy tubs for some distance, and it is more than likely that a heavy fall took place in the burning goaf and drove the flame to where the men were burnt.

Beyond the fallen overcasts there was no evidence of any force. The acting manager says he personally inspected the dislodged dam the day previous to the disaster and it was not even hot. The dam was said by the management to consist of two brick walls with three feet of sand between. It is difficult to understand how a dam of this nature could be burnt out within some forty hours without showing some sign. Stronger dams and more careful and frequent inspections are imperatively necessary.

No. 3 in the list is another warning note to managers that gas must be expected and looked for in the Bengal coalfields.

The man who lost his life was proceeding to his work about 9 o'clock in the morning in Babu B. D. Mukherji's Chhota Dhemo mine, and had entered a gallery 94 feet long when on reaching some 7 feet from the head end an accumulation of gas exploded at his naked light. The man's puggeree caught fire and slipped over his face, which was badly burnt; the flames also burned his shoulders and arms. A fellow workman who saw the flash rushed to his aid from a neighbouring gallery and accompanied him to the shaft. Nine days later the accident terminated fatally. The overman responsible for the inspection of that part of the mine confessed to only peeping into the gallery. His method of inspection was acknowledged by a suitable fine.

It is more than 8 years since gas was seen in this mine; but this heading has been driven beyond a dyke, where the strata are probably more impervious to the escape of gas; this view is in a measure, borne out by the fact that the next mine about 200 feet further to the east, working the same seam, is so troubled with gas that the whole mine is worked with safety lamps. The manager gave an assurance that the area beyond the dyke would, in future, be worked with safety lamps only.

FALLS OF ROOF AND SIDES.

No. 4 in the list which happened at the Barakar Coal Company's Jamgram mine in the Raniganj field illustrates the necessity for setting timber in galleries before commencing to extract pillars or widen roadways. The gallery was 10 feet high by 9 feet wide and the roof showed unmistakable joints in the shale. The deceased was getting coal off the corner of a pillar when a portion of the roof fell and killed him on the spot. This was a preventable accident and the official showed great error of judgment in not first having timber set to support a doubtful roof before increasing the area exposed.

No. 14 in the list resulted in the death of four miners at Dhobidih mine, Giridih, belonging to the Bengal Giridih Coal Company, Limited.

The men were preparing to start work in the head end of a gallery, when roof stone measuring 20 feet by 9 feet by 5 feet 6 inches fell from between two inclined slips and killed them. A glance at the sketch (Plate I) will show that the fall is bounded on one side by a fault having a throw of 2 feet 6 inches, and on the other side, by a slip running parallel to it, and that the direction of each is parallel with the sides of the gallery. Both were clearly disclosed before the roof fell, the fault being exposed throughout the full length of the fall and for some distance outbye, and the slip was traceable in the standing roof behind. There were also lesser slips showing in the standing roof; the stone in fact being disturbed to an unusual extent. The fissures completely severed the roof from any lateral support, and as there were no artificial means of support it is not surprising that the roof collapsed. Good bars about 3 feet apart would have given ample support, and they ought to have been set immediately the fault first revealed itself, as it must have been apparent that this alone created overhanging roof equal to the width of the gallery.

The manager said he made an inspection of the place during the afternoon preceding the day of accident and tested the roof with a stick and found it sound. As the roof which fell was some 6 feet thick it was not likely to respond to a knock from a stick. Apparently he did not attach much importance to the presence of the slips or their combined effect on the condition of the roof, for he stated that he did not consider the place unsafe. Had he done so he would no doubt have withdrawn the men.

Immediately before the accident three shots, each containing three cartridges of dynamite, were fired at a distance of 140 feet away from the edge of the fall and the violent concussion set up would certainly shake the roof. The whole circumstances exhibit a lack of experience on the part of the manager. More knowledge of the effect of faults and slips would have enabled him to detect the danger at a glance, or at least have led him to assume that the unusual conditions called for more than usual caution.

There is no rule under the Mines Act limiting the amount of an official's ignorance. The case was very carefully considered under Rule 44 made under Section 20 of the Indian Mines Act, 1901, and, as the manager was degraded and then dismissed no further action was taken.

No. 16 in the list which occurred at one of the Dandot coal mines in the Panjab, illustrates the necessity for careful examination of the roof in high places and also training in ambulance work amongst the subordinate staff of a colliery.

Although the coal seam is only some 2 feet 6 inches thick, the roof is of such a nature that when a fall takes place, the shale and sandstone break up 26 feet to a bed of limestone. In narrow work such falls effectually block up the roadway and have to be removed before a support can be erected. This support takes the form of "cogging" on substantial timbers built up in the road, and is carried right up to the limestone. In this case after a fall, some eighty sleepers had already been set and the victim was standing on the top of the partially made cog lifting up additional timber, when a piece of limestone from the roof fell upon his leg and broke it. Instead of the leg being bound in splints, it was simply tied up with a puggeree and the man was then carried out of the mine upon the back of a comrade. He was taken to the hospital where traumatic fever supervened and he died five days later.

The roof was apparently examined by means of a light fastened to the end of an 8 feet pole—a very ineffective method of examining a place 30 feet high.

No. 17 in the list which occurred at the Bengal Coal Company's Sodepur mine is the worst accident from collapse of roof that has yet befallen Indian Mining. The seam in which it occurred had been worked on the Bord and Pillar system. The pillars were rectangular in shape 50′ × 35′ and the galleries from 15 to 20 feet wide. The seam is 18 feet thick and contains no very definite partings, but a distinct cleavage. The roof is weak shaley sandstone 10 feet thick and full of joints, which agree in direction with the cleavage of the coal; and above this roof are strong coarse-grained sandstones.

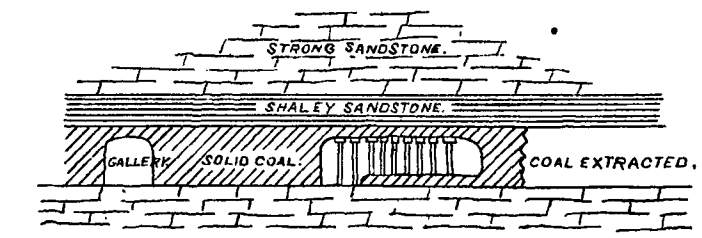
A few months prior to the accident a small goaf, three pillars wide, was started and six lines or eighteen pillars had been extracted up to the time of the accident. Stooks of coal were left along the edge of each pillar next the last goaf as a support to the roof while timber was being drawn off and to give warning of impending crush. Only 11 feet of coal was worked in the goaf, 4 feet being left as a support to the roof and 3 feet of inferior coal in the floor. From time to time as the timber was drawn off the shaly roof fell around the stooks, but the strong sandstone roof remained intact until the night before the accident when it gave warning of a change in its condition by a series of loud "bumps". At this time the line of pillars on which work was proceeding had been reduced to a line of stooks and the last shift's work was being done on the middle one. The sirdar in charge on hearing the "bumps" very wisely withdrew the workpeople and listened. An hour later when everything was quiet he readmitted them and they worked until morning.

About 6-30 A.M. after the people had gone home, the head sirdar joined the night sirdar, and with the aid of a "*chaljhara*" examined the roof of the middle goaf. Shortly afterwards the main roof again became uneasy and the noise of falling stone in the old goaf drove them into the galleries, where they met the day men coming on to work. Instead of withdrawing all the people to a place

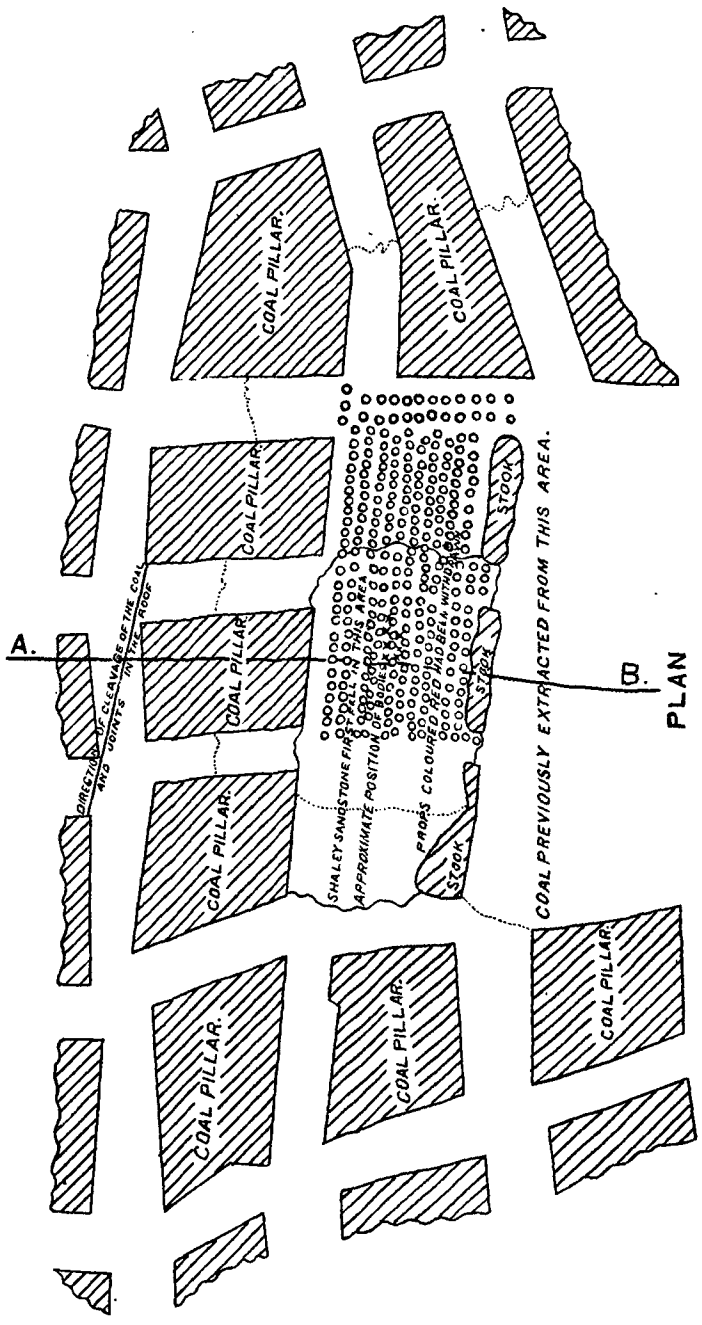
PLAN AND SECTIONS.

OF THE PLACE WHERE SEVEN PERSONS WERE KILLED BY A FALL OF ROOF AT SODEPUR COLLIERY ON 29TH MAY 1909.

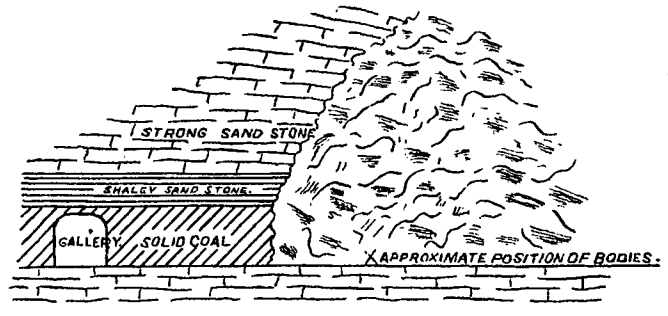
SCALE 1 INCH=60 FEET.



SECTION ON A.B. BEFORE THE ACCIDENT.



PLAN



SECTION ON LINE A.B. AFTER THE ACCIDENT.

Reg. No. 1904 E. 09—V.—1,200.

of safety to await developments, the head Sirdar hurried them into the middle goaf with the object of saving the timber, and, they at once commenced to withdraw it. After 61 props had been drawn, which were estimated as being about half of those set in this goaf, he stopped all work to listen, and the next moment the roof came down and buried him, and also the night sirdar and five others. The collapse was instantaneous. All the lights in the neighbourhood were extinguished by the blast which followed and many of those who had been engaged in carrying back the timber were blown over. The manager, who was promptly on the scene, says that the 10 feet of shale above the coal was concerned in this collapse and it was not until 10 hours later that the main roof fell. This last event prevented the recovery of the bodies.

In reviewing the circumstances connected with the case the most conspicuous, of course, is the action of the head sirdar in entering the goaf with a body of men to draw timber after he had been warned by "bumps" of the approaching collapse of the roof. He was apparently a man of large experience of goaf work, he understood the meaning of "weights" and must have been fully alive to the danger he ran. I can only ascribe his recklessness to the fear of punishment had he lost the timber without making an effort to save it. An European would not have run the risk, and I think that such important and dangerous work—the most dangerous work in the mine—should only be performed in future under the personal supervision of an overman. In this opinion the manager of the mine concurs.

The next point is whether a change in the method of working would reduce the danger attending the extraction of the coal. It will be noticed from the plate (No. 2) that the joints in the shaley roof run almost parallel to the working face, consequently placing the latter in the worst possible position to counteract their weakening influence. The "bumps" heard in the old goaf shewed that the cohesion of the sandstone was being strained to bursting point, the effect of which would be to unlock these joints, to predispose the roof to fall and to cast the weight upon the timber. Withdrawal of the timber would naturally be followed by a collapse. To reduce this danger to a minimum the direction of the working face should be at right angles or nearly at right angles to the direction of the joints.

The third point is the excessive size of the goaf. It was 60 feet wide by 180 feet long and had been made according to the size of the original pillars. This size had been determined from the depth of the seam ; so that there was no connection between the size of the goaf and the quality of the roof. This was a radical mistake. The quality of the roof should determine the size of the goaf in extracting pillars. In other words it should always determine the size of the pillars to be extracted in one operation. The roof collapsing before the timber was drawn shows the extent of the error made.

Apart from the risk of working under an old roof which a large goaf always entails it is not a sound policy to have the work people's retreat impeded by so much timber as this large area of goaf demanded, nor is it wise to have them working so far from a place of shelter in the event of any unforeseen danger revealing itself.

It would appear therefore that the future safe extraction of such pillars depends on :—

(1) Goaves formed in one operation not exceeding 35 to 40 feet wide.
(2) Direction of working face running at right angles to, or at least obliquely with, the direction of the joints in the roof.
(3) Withdrawal of timber from the goaves under the personal supervision of an experienced overman.

SHAFT ACCIDENTS.

No. 49 in the list is one of the few accidents not due apparently to preventable causes and incidentally shows the great value attaching to the use of the detaching hooks in sinking shafts.

A hoppit containing four sinkers was being raised in a sinking shaft 201 feet deep when by some mischance the engineman failed to stop it at the

banking level and it was carried into the headgear and there safely suspended by the detaching hook. Unfortunately one of the men, an aborigine, jumped out of the hoppit when it was some 15 feet above the banking level and fell down the shaft, his object being no doubt to spring upon the runner trolley which was standing to one side below, preferring this chance of saving himself to the unseen, and probably unknown one, above. To any one acquainted with the fact that the apparatus was provided with an automatic contrivance to prevent overwinding such a means of escape would not have suggested itself and I fear that very few of our sinkers, or miners for that matter, are ever aware of the existence or the use of such safety appliances. An English sinker would have sat tight under the circumstances.

As not infrequently happens in cases of overwind the personal element here was the primary cause of the accident. All the mechanical appliances, which are of a substantial order, were in good repair. The explanation given by the engineman is that his hand slipped on the steam valve lever when the time came to shut off steam and the overwind occurred before he could apply the brake. This may have been the cause, but in the light of other facts probably not the definite cause. In the first place the drum is fitted with beam brakes easily applied and powerful enough to stop the engine with full steam on, and in the second place the drum would have to make two complete revolutions to carry the hoppit from the banking level to the detaching plate which is a distance of 37 feet. The steam lever is not difficult to operate—it is of the ordinary type—and I cannot conceive, in the event of the engineman's hand slipping on it, more than a moment being required to renew a grip on it and pulling up the engine with the aid of the brake long before the hoppit reached the pulleys. As an experiment the permanent disc indicator was being used to sink with in place of the almost universal Indian practice of tying a token on the rope to warn the engineman when to shut off steam. The gong of it was not in use and as no other means were provided to warn him it is not improbable that he overran the point before he realized the position of the hoppit in the shaft. A third possible cause was momentary mental aberration on the part of the engineman.

Both the pit bank and the indicator were well lighted.

The immediate effect of the accident was to drive away all the labour at the sinking belonging to the caste of the deceased. A superstitious dread, at least in the Raniganj coalfield, appears to seize the people after a fatal accident occurs especially amongst the aboriginal tribes, and the hindrance to work which follows constitutes a serious loss to any colliery visited by such a misfortune.

No. 56 in the list which happened at the Lutchipur mine belonging to the Damuda Coal Company, Limited, illustrates the necessity for fence gates upon cages.

Three persons, two onsetters and their assistant, were being lowered in a shaft when one of them fell out of the cage and was killed. The injuries he sustained were such as to indicate that he fell a considerable distance. His companions could not say from what point in the shaft he left the cage as neither of them felt any movement, nor heard the slightest sound and they were only aware of his disappearance when the cage reached the bottom of the shaft. The cage was of the ordinary construction 5 feet 3 inches long by 3 feet 3 inches wide made to carry one tub or four persons. Each end was provided with a fence-chain, neither of which, however, was fastened on this journey, and if both of them had been secured it is extremely doubtful whether they would have afforded the slightest protection to the men in the cage as they were made to hang only 1 foot 7 inches above the floor of the cage. They were doubtless provided not to safeguard men but as an addition to the ordinary tub catch.

In regard to the condition of the victim at the time of the accident the evidence is somewhat conflicting; it is more than likely that he was under the influence of drink, and so contributed to the accident. The chief cause, however, was in all probability the intense heat prevailing in the shaft. A steam pump exhausts into this shaft and the temperatures at one-third, and two-thirds of the way down were, under these conditions, 98° and 102°, respectively; the wet bulb thermometer registered exactly the same, showing that the air was completely saturated with moisture. This is unfortunately not an

BENGAL COAL COMPANY, LIMITED,

SODEPORE COLLIERY

(BENGAL).

FIG. 1.

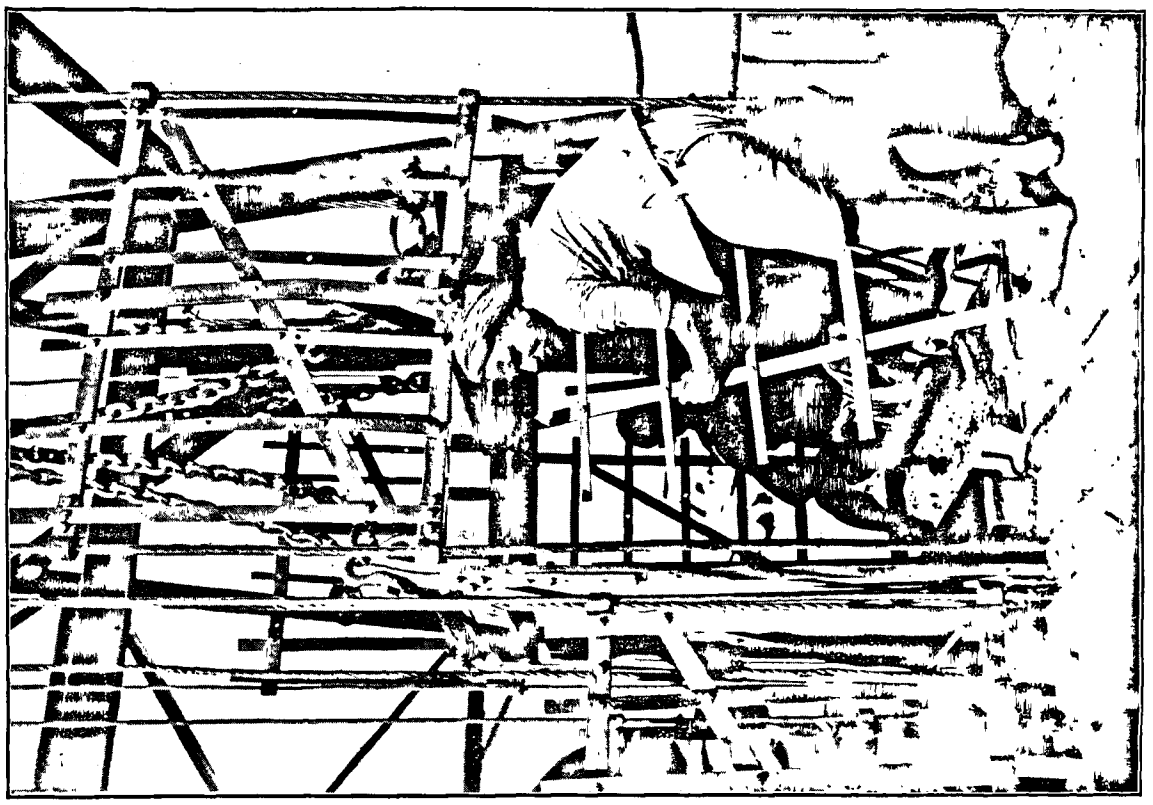
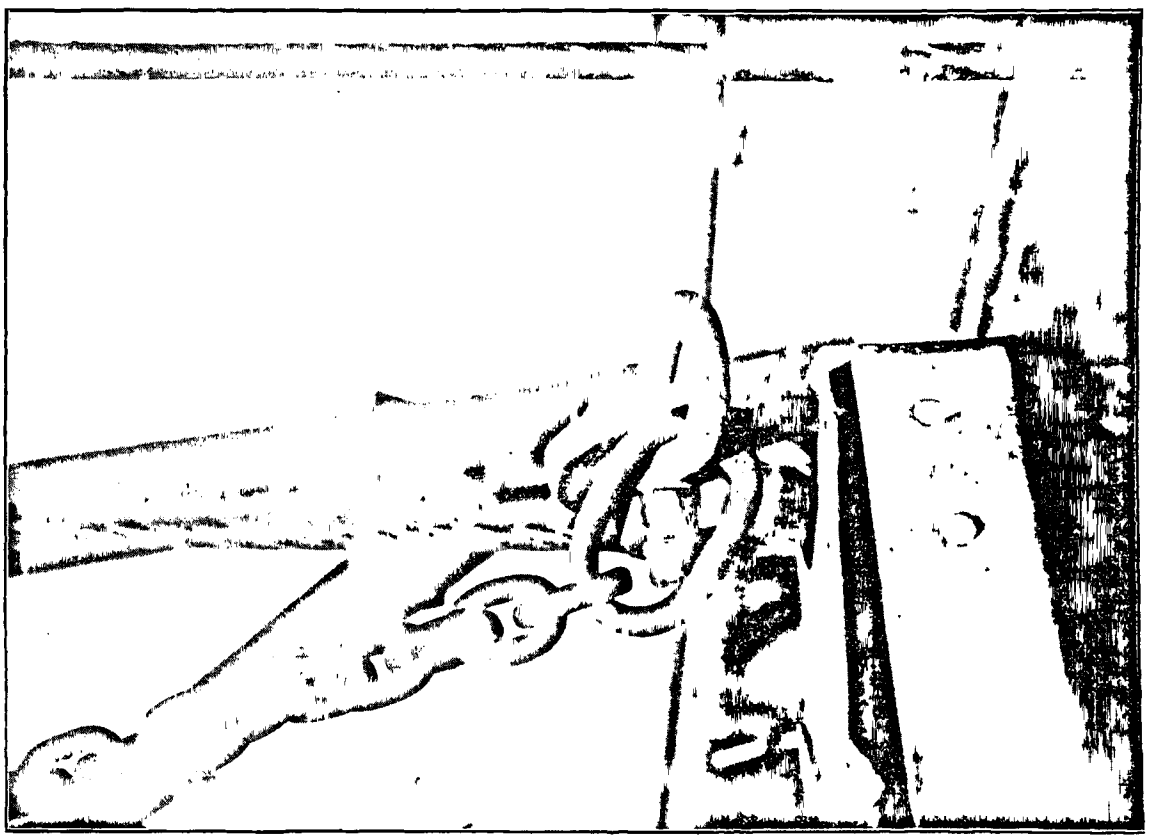


FIG. 2.



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Survey of India Offices, Calcutta.

isolated case; in other hot shafts people have fallen from the cages and been either killed or seriously injured.

The effect on a person breathing saturated air at a high temperature and also the use of fence gates for shaft cages were some of the subjects of investigation by the Royal Commission on Mines in England. The Commission fixed the temperature limit at which work could be performed at 85° (saturated). Passing through saturated air at a temperature 17° higher than this must have a serious temporary effect on the health of a person of weak constitution, or on one whose condition predisposes him to fall an easy victim to unconsciousness.

The Commission also recommended the use of fence-gates upon all cages used for carrying workpeople; and, until it is made compulsory to fix such gates on all cages in shafts into which steam is allowed to exhaust, I am afraid this class of accident will become commoner as the number of shafts is increased.

No. 63 in the list which is the most disastrous accident of its kind in Indian Mining was caused by the ascending cage colliding with the descending cage in No. 7 shaft, Sodepur colliery, belonging to the Bengal Coal Company, Limited.

The only occupant of the ascending cage and four of the five persons in the descending cage were thrown to the bottom of the shaft and killed. The shaft in which the accident happened is an upcast having a steam jet fixed near the bottom for producing ventilation. The cages are single decked, constructed to carry one tub or six persons; the hood of the north cage being flat while that of the south cage is curved. At the suggestion of this Department the ends of the cages were provided with fence gates a year ago; the type adopted, which is shown on Plate IV, figure 1, is made entirely of flat iron and consists of two vertical members hooked at one end and pointed at the other with four cross pieces rivetted to them. When in position the gate is hooked to a cross bar fixed under the hood and let into holes in the floor of the cage. No objection is raised by the workpeople to their use; on the contrary, as the manager states, the people see the safety of the arrangement and like it.

The cages run on steel wire rope conductors, two to each cage, both on one side of it, which are suspended from the headgear and weighted in the sump. Between the cages are two more rope safety or "rubber" guides suspended in like manner.

The accident happened at 11-30 in the morning. The assistant banksman was in charge at the time when five men came on to the pit bank and signified their intention of going down the shaft by walking into the cage One of them called out for the signal to be given and the assistant banksman gave it and saw the cage lowered. He says he noticed there was a gate upon one end of the cage, but did not look to see if there was one upon the other end. When the onsetter received the signal, five persons were desirous of going up the shaft. He informed them that as he had no fence-gates he could not permit them to go. A youth, however, persuaded the onsetter to allow him to ride, and the return signal was given. It is particularly unfortunate that out of five gates—a spare one being kept in stock—only one was in actual use at the time of the accident.

The evidence shows that after the cage started from the bottom of the shaft, the bottom of the cage struck the boards which are fixed at the shaft mouth as a protection to the onsetters and the blow caused the cage to oscillate as it ascended the shaft. Unhappily, small coal and dirt had been allowed to accumulate in the sump with the result that all the weights were jammed and the guides had lost their flexibility and a good deal of their original tension owing to the debris getting beneath the weights. There is no doubt that the ascending cage struck the bottom of the descending cage and the youth in the former was precipitated to the bottom of the shaft; immediately afterwards four of the five in the descending cage met their deaths in the same way. The survivor when rescued was found sitting upon the fence-gate which had become displaced and was lying upon the floor of the cage; he was badly shaken but sustained only slight bruises. The ascending cage was very badly bent and the bolt of the D link connecting one of the bridal chains to the hanger was almost sheared and its head badly abraded. The Inspector who investigated the accident satisfied himself by careful measurements that this bolt came in

contact with the descending cage ; he also proved by experiment that one of the bridal chains could easily be shortened by one of the links getting over the D link bolt, as shown on Plate IV, figure 2, the effect being to tilt the cage and force the opposite corner into the shaft.

The onsetter frankly admitted that the bridal chains got kinked round the projecting ends of the bolts two or three times a week and that he generally released them before allowing the cages to ascend. Since the accident D link bolts of the cages in all the shafts under the control of this manager have been shortened and made so that kinking of the chains is impossible.

It seems hardly necessary to point out that all D link bolts connecting bridal chains with hangers should never be allowed to project beyond the nuts, especially on flat topped cages. One cannot resist the conclusion that possibly all these lives would have been saved had fence-gates been fixed upon the cages.

Nos. 64 and 66 in the list both happened at the Raniganj Coal Association's Alkusa Sinking Pit. In the first case two men were examining the sides of the shaft after shot firing, and to do this stood in the bucket and tested the sides with a long stick. When about 55 feet from the shaft bottom, the bucket upset and precipitated them to the bottom, killing them both. There is little doubt as to how the accident happened. The buckets in use are of the ordinary type swinging upon the bow ; the latter is kept in position by means of a locking lever pivoted on the bow, and falling into a notched plate fixed upon the bucket lip. The handle of this pin is in the inside of the bucket and has only to be lifted up in order to release the bow and turn over the bucket. The arrangement can be seen in the photograph, Plate V, the lever being just above B. One of the deceased may have caught the lever with his testing stick, or possibly with his shoulder. The design is not a good one and is much more complicated than there is any necessity for.

The other accident resulted in the death of one man. Upon the movable sinking trolley used at the top of this shaft an iron frame is erected which carries a rail resting in slots at the top of each upright. The rail carries a hook upon which the bucket is hung so that the latter can be tipped when the trolley is run off the shaft. On this occasion the bucket was being raised by the winding rope off the hook when the shackle of the detaching hook caught the rail and lifted it off the uprights. The rail dropped on to the ground, then rolled beneath the trolley and down the shaft, killing the hookman who was at the bottom.

The arrangement had been in use for a considerable time, and nothing untoward had previously occurred. The sinking was practically over and the shaft ready for the permanent cages. The rail is shown marked A in the photograph, Plate V, and the pieces of wire near the ends of it is the method of fastening the rail after the accident.

The rail of course ought to have been rigidly fastened to the uprights.

No. 65 in the list, which happened at a Jharia colliery, proves the necessity for having some form of automatic gate for guarding the tops of shafts.

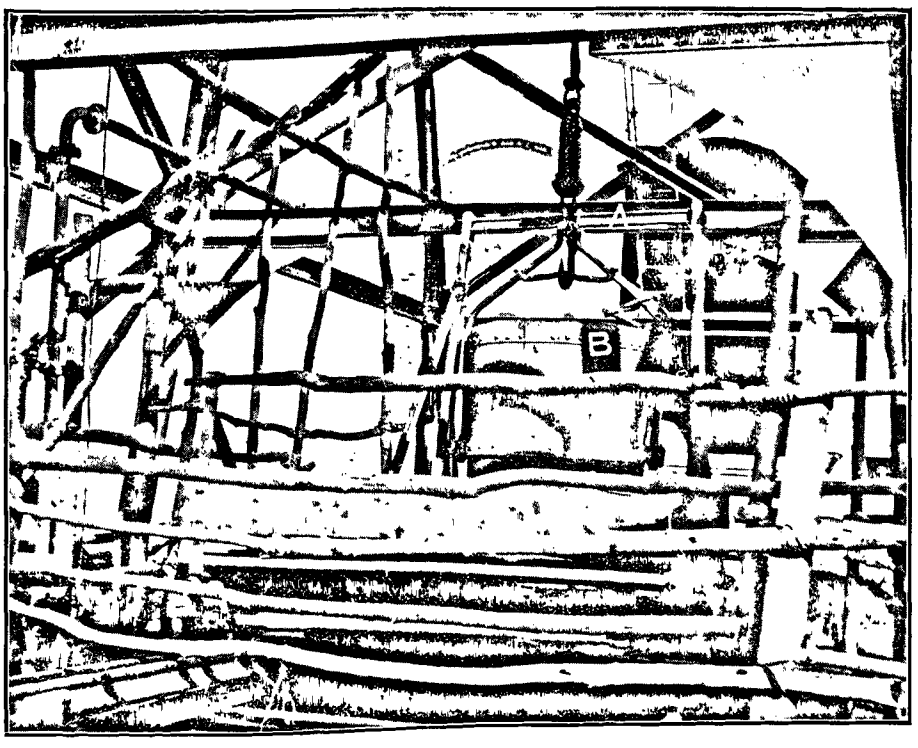
During the night, when the surroundings of the shaft were illuminated by a large fire, the banksman sent three men away with a full tub which he had taken from the cage, and then went a few yards for an empty tub. After bringing this tub, instead of pushing it into the cage, he pushed it along another short set of rails into the shaft, where it fell 116 feet to the bottom and killed the onsetter. How the man could mistake where the cage was is very difficult to understand. The winding engineman saw him pushing the tub and shouted to him, but too late. As is usual in such cases the culprit immediately disappeared, and could not be traced. A wire fence was used to guard each side of the pit top, but neither was apparently in use. Since the accident automatic fence-gates have been adopted.

An accident of more than passing interest, happily unattended with loss of life, occurred in one of the Bengal shafts during the year. A loaded cage weighing 1 ton 13 cwts. became disengaged from the detaching hook while ascending the shaft and fell a distance of about 250 feet. The detaching hook was one of Ormerod's and upon examination was found to still hold two-thirds

RANIGANJ COAL ASSOCIATION, LIMITED,

ALKUSA COLLIERY.

PLATE No. 5.



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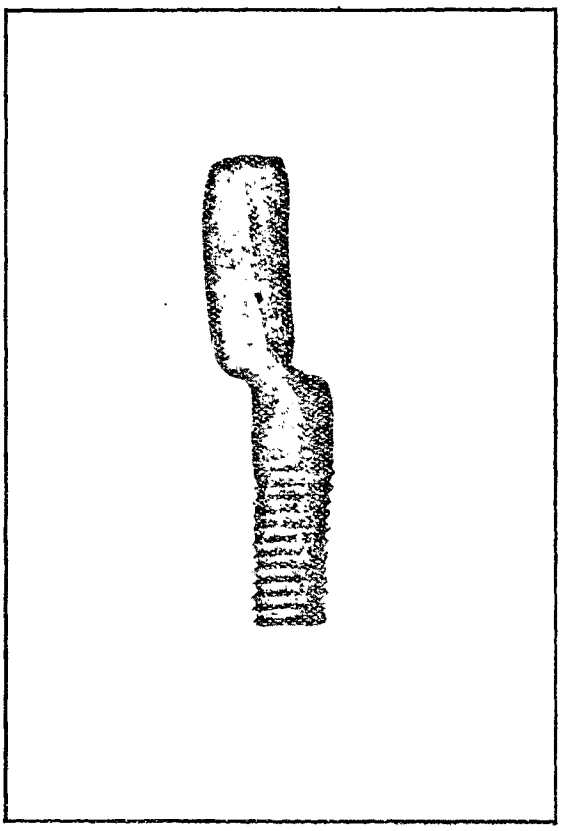
Survey of India Offices Calcutta, 191

of the copper pin in its hole after the accident; the pin, however, was almost sheared as shewn in the illustration given below, the other portion had apparently fallen out and was not recovered.



It transpired at the inquiry into the causes of the accident that the automatic fence-gates at the shaft top had been carried into the headgear some time before and smashed; but the incident had aroused no suspicions and work went on as usual until the accident happened. The construction of the gates and headgear is such that the former could only be damaged when the hook entered its receiving bell and according to the marks on the shoulders of the hook plates this is what appears to have happened.

No doubt the engineman promptly applied his brake as soon as he saw an overwind had occurred and the resistance offered by the gates would stop the cage, but not before the shoulders of the hook plates had been compressed and the pin partially sheared. Finding that actual detachment of the winding rope had not taken place the engineman lowered the cage and went on with his work. Subsequent vibration broke one of the narrow-necks of the pin and allowed the other part of the pin, which was $\frac{1}{16}$ inch less in diameter than the diameter of the hole, to tilt up to the movements of the plates and release the shackle.

The accident might easily have been accompanied with a serious loss of life, and, it is recorded here in the hope that it may have the effect of drawing attention to the necessity for a careful examination of all detaching hooks whenever anything unusual happens in winding shafts.

HAULAGE ACCIDENTS.

No. 92 in the list which happened at Maharaja M. C. Nandi's Vanora Khas mine in the Raniganj coalfield illustrates the necessity for careful organisation in details. A train of seven full tubs was being hauled out

of the incline and after travelling a short distance the engineman found that the steam pressure was insufficient to pull the load. He then set back until he had slackened the couplings, and started again with a rush. This severely strained the hook of the second coupling, and by the time the train had gone about 50 yards, the hook tore open at the bend and allowed six tubs to run amain.

The tubs ran through the stop block and struck two men who were bailing water in the main dip. They were probably running for shelter, when the tubs struck and killed them on the spot. It is more than likely that the drag had not been attached, as experiments with it proved it to be very effective. Everything connected with the place was of excellent workmanship and material.

The accident was due to imprudence on the part of the engineman who started his train with a jerk : he of course disappeared. The boiler was of ample power but apparently the supervision was not keen enough to ensure the proper pressure being maintained.

No. 113 in the list which happened on the surface at the Bilbera Coal Company's Baraboni mine was distinctly the result of want of proper care.

The deceased was fireman of a boiler situated about 100 feet from the top of the haulage incline. This boiler is so placed that it cannot be seen from the incline top and the tram road leading past it curves around slightly to avoid the intervening obstruction. The grade is such that a tub gathers considerable impetus before it passes the boiler, but a little further on the road flattens and tubs run to a standstill. The night was dark and apparently there was no light near the boiler. The hookman admitted that he allowed the tub to run down the grade by itself, but claimed to have shouted to warn the boilerman.

The deceased was crossing the line to reach a feed pump and stated that he tripped over the rail and was run over by the tub. He died within two days of the accident.

Tubs, especially at night and upon a curved road should never be allowed to run uncontrolled.

SURFACE ACCIDENTS.

No. 115 in the list happened at the Sanctoria mine belonging to the Bengal Coal Company, Limited. A high screen wall, banked up on one side with loose soil and ashes, was being demolished, and in the process the loose ground had been cleared as the wall was reduced until the top of the foundation was reached.

It was then considered inexpedient to continue to remove any more of the loose ground so a trench was dug to bare the face of the foundation wall. The trench was 38 feet long by 8 feet wide at the top, gradually diminishing in width, as offsets in the brickwork foundation were met with, until at a depth of 9 feet 6 inches, it was reduced to 5 feet 3 inches. The earth side of the trench was perpendicular and unsupported in any way.

On the day of the accident there were five persons engaged in deepening the excavation when a slight movement of the side warned them of danger, but before they could make their escape the side for nearly the whole length of the excavation fell in and caught them, killing three and seriously injuring the other two. The work was in the hands of a contractor, but was supervised by the management. Suitable timber was lying about and could easily have been set—a few stretchers would have been enough—and, it is astonishing that the appearance of the place did not suggest this simple precaution. It was a grave error of judgment on the part of the management.

Codes of rules can hardly be drawn up to safeguard every possible form of excavation ; something must be left to experience and common-sense, and managers are presumed to possess both.

ACCIDENTS NOT INCLUDED IN THE STATISTICS.

No. 3 in the supplementary list should have special mention in this report if only to draw attention to the conduct of Ramlal Bauri, a pilot khalassi, in saving the lives of two children and risking his life in endeavouring to save a third.

The man was sitting upon the brake of the first of eight empty wagons which were being shunted upon the Panchgatchia colliery siding belonging to the Lutchipur Coal Company, Limited. As the wagons went around a curve he noticed three children, who shortly before were near a tank, playing upon the line ; he jumped off and picked up two of the children and was trying to get hold of the third when the wagon ran over it. He was knocked down himself but escaped injury.

Section IV.—Prosecutions and additions to the Act.

PROSECUTIONS.

Only one prosecution was instituted during the year ; this was against the manager of the Asansol mine belonging to the Ghusik and Muslia Collieries, Limited.

Two shafts had been sunk to the Satpukuria seam, but they were not connected underground, and no artificial means of ventilation were provided.

On the 8th June a workman was severely burnt by an explosion of firedamp which ignited at his naked light. Safety lamps were afterwards used, but only in the galleries on that side of the shaft near to the scene of the accident, and only in the workings connected with one of the shafts ; naked lights were used elsewhere. On 31st July another explosion occurred, injuring the same workman. Investigation showed that at the time of the accident, the bottoms had been taken off two of the lamps rendering them naked lights. Apart from that all the lamps in use were in a defective condition ; the top of each gauze was pierced by large holes ; the gauzes were filthy ; no asbestos rings were used ; and some of the glasses were cracked. No competent person appeared to be in charge of the lamps, in fact the lamps were not safety lamps in any sense of the word.

Charges were laid under rules 4 (*a*) (*b*), 15 (*a*) and 17 (*a*) (*b*) (*c*) (*d*) made under Section 20 of the Indian Mines Act, 1901.

The case was tried by the Sub-Divisional Officer of Asansol and the defendant was fined ₹50, ₹25 of this amount being allocated to the person injured.

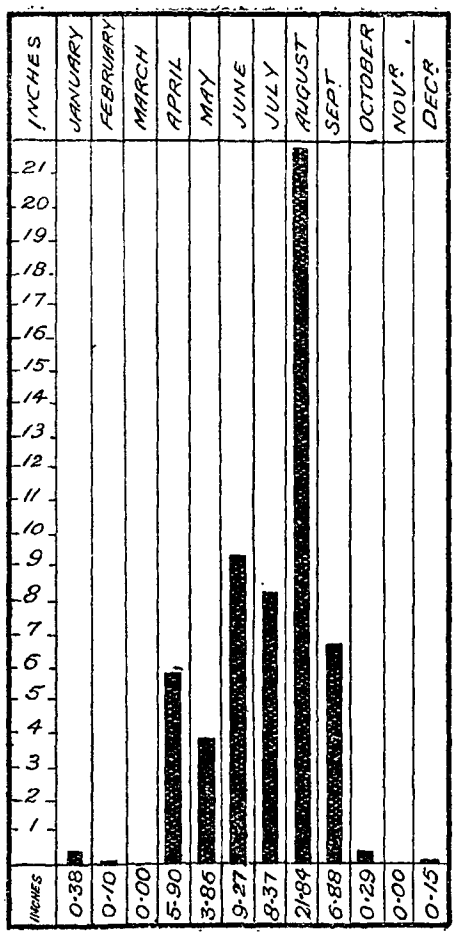
Section V.—General Remarks.

HEALTH AND SANITATION.

In consequence of the many shallow workings, the porous nature of the coal measures in Bengal, and, in so many cases, the dependence of the miners working in the coalfields on shallow tanks for their drinking water, the rainfall has a distinct bearing on the progress of the mining industry.

In years of drought, such as 1908, the scarcity of water is reflected in outbursts of cholera which destroy or drive the labour from the mines ; while in years of heavy rainfall cholera becomes practically an unknown disease ; but other conditions supervene—workings become restricted and many mines have to close, and, the labour is attracted to more congenial work in the fields by the prospect of good harvests.

1909 has been an exceptionally good year as the appended diagram shews.



Rain fell early enough to prevent tanks and wells becoming depleted and continued long enough to ensure good harvests. Altogether 57·04 inches fell in a total of exactly 100 days and, except on one occasion, with such regularity that the downfall never exceeded two inches in any one day, a circumstance which enabled the pumps in most of the mines to cope with the water that had drained into the workings.

The unsatisfactory state of sanitation in the mining areas of Bengal has been engaging the attention of the Government of Bengal for some time past; and His Honour the Lieutenant-Governor, who visited the coalfields in November, was so impressed with the fact that an adequate water supply was an urgent necessity, that he has since appointed a Commission to make an investigation and formulate a scheme for the supply of water to the Jharia coalfield.

Although large quantities of water are constantly being pumped from many of the mine shafts, the most reliable source of supply will probably be found to be the river Damuda. The report of the Commission will be awaited with interest. In the meantime, as depleted tanks are such a source of disease, they should as far as possible, be kept full of water pumped from the mines, the risk of contagion will thus be lessened and the water rendered comparatively innocuous.

At some of the Khost collieries belonging to the North-Western Railway, the heavy loss sustained yearly by the ravages of malaria determined the colliery authorities to combat the disease by dosing each man, woman and child (excluding babies) in the mines, villages and bazars with 10 grains of quinine weekly free of charge as a prophylactic. To remove the taste of the quinine caraway seeds and raisins are freely distributed. Generally speaking every one takes the dose without any persuasion. One week a *Mekrani* woman refused to take her dose and soon after got fever; it was noticed that she was the first to ask for it the following week.

The success of the experiment has been very great, the hospital statistics showing considerably less cases than in former years.

Many of the workers in the mica mines in the Madras Presidency suffered from fever and small-pox, but fortunately measures were adopted which prevented the spread of the diseases.

A gratifying feature in the Bengal coalfields is the increased number of comfortable detached dwellings of brick and tile which have been erected at many places for the mine workers. The policy of attaching the worker to the mine must have excellent results.

AMBULANCE WORK.

For the first time in the history of coal-mining in the Raniganj field, the subject of "First Aid to the Injured" has received systematic treatment. As soon as the suggestion was made to organise classes at Dishargarh under the auspices of the St. John Ambulance Association influential support was forthcoming from the leading mining officials in the neighbourhood.

Mr. W. Miller, Ex-President, Mining and Geological Institute of India, warmly welcomed the movement and became President of the centre with the following gentlemen as members of the Committee :---Messrs. Geo. Miller, F. Owen, J. Mackintosh, W. J. Rees and A. Sheridan. Mr. G. C. Leach, Inspector of Mines, to whose initiative the classes are due, acted as Honorary Organising Secretary.

Dr. W. P. O'Connor, Chief Medical Officer, Equitable Coal Company, Limited, delivered twelve lectures free to two classes composed of Europeans and Indians, respectively, in the Lecture Hall at Dishargarh. At the end of the course two examinations voluntarily conducted by Dr. Frank T. Simpson, Chief Medical Officer, The Indian Collieries Syndicate, Limited, were held and all the candidates, numbering 35, passed. One candidate gained a label, another a medallion, a third a voucher and the rest certificates. This result reflects the greatest credit on Dr. O'Connor and testifies to the able manner in which he conducted the classes. Dr. Simpson reports that the candidates showed a thorough knowledge of their work and that they were smart and precise in the application of practical work.

The success attending the classes indicates that there is a genuine desire for knowledge of ambulance work in the coalfields; and I trust the movement will spread until the whole of the mining industry is banded together into a large coal mines centre having local centres in each district. These classes will be the best medium for the establishment of rescue corps trained to the use of life-saving apparatus and ready at a moment's notice to assist in rescue operations underground. I look forward to the time when such an organisation will embrace every official, European and Indian, employed at a mine, and all capable of rendering that first aid, which has proved over and over again to be the means of saving life.

MINING EDUCATION IN INDIA.

Progress in mining education is being maintained, and the need for it is still urgent.

Mr. E. H. Roberton, the Professor of Mining Engineering at Sibpur College, reports that only one of the students who sat for their diplomas in the principles of mining in 1909 was successful, he has since obtained an appointment in prospecting work in connection with the Public Works Department of Eastern Bengal and Assam. Others who left the college last year without gaining their diplomas have also been successful in obtaining employment in the mines, while one joined the electrical department at the college, and has succeeded this year in gaining his diploma, as well as the electrical certificate.

In 1909-10 there were eighteen students attending the mining classes at the college, two of whom were "special" scholarship holders. Six students were successful in gaining their diplomas, while out of twelve who sat for examination in Course I, six were successful, and are proceeding to Course II. One old Sibpur mining student (special) was successful in gaining a first class certificate of competency in November 1909, while five gained their second class certificates.

The cold weather mining camp was pitched at Sijua during November and December 1909. Surveys were made of Titulmuri, Jogta, and Mudidih

collieries, and visits of inspection were made to many well known collieries, including the Raniganj Coal Association's Mines, the East Indian Coal Company's Mines at Kendwadih, Burragarh Coal Company, Nowagarh Coal Company, Sendra, Loyabad, and Gaslitan (New Manbhum).

The mining laboratory is now practically complete, so far as machinery goes, the last machine to arrive being a model Blackett coal washer, which is now being installed. The building in which the machines are housed is, however, too small for the purpose, owing to its being built with the idea of an imminent removal of the college to Ranchi. It is hoped to make it larger by adding two bays each 14 feet in depth.

Mr. W. T. Griffiths, the Mining Instructor, informs me that the courses of instruction in the coalfields continue to be well attended. The number of students registered up to the end of the year was 230, and the average attendance at the four centres was 28 per lecture.

There are 105 persons who have been granted certificates of competency under the Indian Mines Act, 1901, and of these 88 have from time to time attended the courses, putting in an average attendance of about 21 per certificate granted.

Session 1909-10 will mark the close of the quinquennial experiment in peripatetic instruction in the principles of mining initiated by Government in the year 1905 in the Bengal coalfields.

The objects of the Advisory Board elected to control this work were :—

1. To assist in the establishment of the Indian Mines Act (1901), by affording means to enable mine officials to get the necessary technical knowledge to qualify for certificates of competency as mine managers which are now compulsory.

2. To improve the standard of mining knowledge of all persons employed in the industry.

The Board is very satisfied with the results obtained, and most strongly urges that the system of peripatetic courses be continued and developed. It considers the experiment to have been a complete success.

As it is impossible to impart a knowledge of the principles of mining unless the student has received some instruction in elementary science, the Board recommends that the scheme should be developed so as to include this instruction, and, make suggestions as to the centres to be established for the purpose.

There are large numbers of Indian subordinate officers at mines who are not acquainted with the English language, but who have received the ordinary education provided at their village schools and can read and write their own language. If we are to hope for progress in the practice of mining, it is absolutely necessary that these persons should possess adequate technical knowledge. There is no book at present written in the vernacular on the subject of mining and before any proposals can be made for the instruction of these subordinates the Board recommends that the compilation of a vernacular textbook dealing with practical coal mining to be published in Bengali should be taken in hand.

At a meeting of the Board held at Jharia at which there were present by invitation some of the most influential mining men in the colliery districts, resolutions embodying these suggestions were unanimously passed.

MINING AND GEOLOGICAL INSTITUTE OF INDIA.

The Mining and Geological Institute of India has now obtained a firm hold on the industry and the number of its members is increasing rapidly. It is not only numerically strong but is exercising a potent influence on the members. The meetings which have been held during the year are full of encouragement for the future of good mining. Some excellent papers have been read, and, what is of much more importance, wholesome discussions have resulted upon topics of practical value which appeal to the colliery manager.

The Institute has now taken the important step of having fixed headquarters with a room where members can meet each other and read current engineering literature. A library is also in course of formation.. The premises are in connection with the offices of the new Secretary, Mr. H. A. Pringle, Consulting Engineer, 12, Dalhousie Square, Calcutta.

The members of the Institute resident in England have founded a club (open to all members of the Institute) known as the Indian Mining and Geological Club with premises at 30 and 31, Furnival Street, Holborn, London, E. C. The club has been started with the object of facilitating the association of persons directly interested in the study of mining methods and mineral occurrences in India and the development of the mineral industries in the country.

It is proposed to form a reference library in London relating primarily to Indian Mining and Geology including mineral and commercial statistics: to establish a bureau and address register to facilitate the meeting and correspondence of members on leave or retired from Indian service; to accumulate funds for the establishment of scholarships; and hold meetings for discussion, etc. It is believed that such an adjunct to the Institute cannot fail to be of value. Members of the Institute who purpose visiting England should place themselves in communication with the Honorary Secretary.

BOARD OF EXAMINERS.

During the year a change on the Board occurred through the resignation of Mr. W. Miller, and the Board now consists of the Chief Inspector of Mines in India (*ex-officio* President), and Messrs. J. J. Turnbull and S. Heslop. I take this opportunity of recording the valuable and appreciated service rendered by Mr. Miller to the Board.

Six meetings of the Board were held.

Out of nineteen applicants holding foreign certificates fifteen were granted similar Indian certificates.

Two examinations for certificates of competency as colliery managers were held; one on the 24th February at which twelve candidates out of a total of fifty-six were successful in obtaining certificates of competency: the other examination was held on the 3rd November at which fifty-nine candidates presented themselves and only eighteen satisfied the examiners.

At the first examination, the non-official examiners were Messrs. Geo. Miller and G. C. Lathbury, and at the second Messrs. R. J. Browne and G. C. Lathbury; Mr. G. F. Adams being the official examiner at both.

MINING BOARD.

Only two meetings of the Mining Board were held during the year and the subjects under consideration were—

(*a*) Draft rules for all mines other than coal mines and mines exempted from the operation of the Indian Mines Act.

(*b*) The framing of rules under Section 20 (*n*) of the Indian Mines Act to regulate the water-supply, sanitation, and conservancy in mines.

(*c*) Proposal to add a vernacular language test at the examination for colliery managers' certificates of competency.

(*d*) Draft revised rules for the grant of licenses to prospect for minerals and of mining leases in British India.

NOTES ON COAL MINING.

Coal mining in India has hitherto hardly come under the head of an exact science. The richness of the deposits outcropping at the surface in Bengal has made it possible for mining to be commenced without knowledge, with a total lack of experience, and, yet with a considerable amount of financial success.

Huge galleries and small pillars—pillars quite inadequate for proper support of the surface—was the ordinary method adopted. The large area of the galleries coupled with the fact that explosive gas was never seen apparently did away with the need for ventilation; while the strong sandstone roof which overlies most of the Bengal seams, obviated the necessity for safeguarding the future of the roadways. With a roof that showed no signs of collapsing, it was manifest that the easiest coal to get was that which was weathered and fracturing upon the sides of the pillars; so pillars already small became steadily smaller. This

could only last for a time, perhaps months, perhaps a year or two until nature asserted herself and the weight of the strata crushed out the weak pillars, and large areas, if not the whole mine, were irretrievably lost. This is an oft-told story ; unfortunately it means a national loss, as such coal is lost for ever.

A striking example of such imperfect methods recently came to my notice, and in this case, the reason for the system adopted can be traced to an iniquitous lease which bound down the lessees to work the coal into pillars not greater than 12 feet square by means of roads driven not less than 18 feet wide. The pillars were on no account to be extracted nor the surface of the ground disturbed. In order to maintain the output, it has been found necessary to goaf, but before sanction could be obtained from the lessor a sum amounting to Rs. 18,000 had to be paid. It is anticipated that a higher royalty than the annas 9 per ton that is now being paid will be a condition of any new lease. While such leases are in force it is impossible to mine coal with profit to the individual or to the State.

The Panel System of Working.—After the fire at Charanpur mine in 1907 opportunity was taken in the report of the Chief Inspector of Mines to draw attention to the necessity for being able quickly to isolate areas of workings, and the hope was expressed that the lessons of the disaster would not be thrown away. I regret to say that this timely advice has, in the majority of cases not been taken. Unfortunately, large and responsible companies are the culprits in this matter. One sees the spectacle of a large coal property where the conditions are so pre-eminently suitable for panel working being cut up in the old fashioned and wholly unscientific way into one continuous area of pillars with a range of six or seven inclines into the seam. In the case of a fire or inundation in any part, the whole property is immediately in danger and would, in all probability, be engulfed.

With one or two exceptions the only method of working coal in Bengal at the present time is the Bord and Pillar System. From the mouth of the incline or the limits of the shaft pillar the area is gradually cut up into pillars the output depending upon the amount of coal extracted in the galleries. This operation continues until the boundary of the royalty is reached and then the work of extracting the pillars commences. Sometimes it happens that the demand for coal is so large that an effort is made to take out the larger percentage of coal in the seam by means of the galleries and the pillars that are then left are barely of sufficient strength to resist the weight of the superincumbent strata ; consequently when the boundary of the property is reached the mine has to be abandoned and the coal in the pillars is lost. In large properties it may be 20 or 30 years before the limits of the boundary are reached and the pillars formed in the early days of the mine suffer severely from weathering and crush, and the coal on the sides of the pillars loses its nature from exposure to the air and peels off as small coal, or, it gets crushed by the weight of the roof. Fresh surfaces are thereby exposed to the same disintegrating actions and in the end a heavy loss of good round coal is entailed. In addition to this, gallery driving yields a far greater percentage of small coal than pillar-cutting, the work is more arduous, the cost per ton is higher and the output per person employed is considerably less, so that for many years after the mine has started, it is worked at the greatest disadvantage from every point of view.

In seams that are liable to spontaneous combustion, and there are several in India, the danger from fire is always present after pillar-cutting or goafing has started. The small stooks or pillars of coal left behind as temporary supports are crushed into heaps of dust by the weight of the roof and spontaneous combustion invariably follows. When this happens it is impossible to get near to the heated coal to shovel it out, or to quench it with water on account of the fallen stone in the goaf, and the only effective remedy is to isolate the area, where the fire occurs, from the rest of the workings. With a network of galleries opening out of the goaf on all sides this is often a gigantic undertaking, for every outlet will have to be hermetically sealed by walls to prevent the spread of the fire. Unless a fire is checked or extinguished immediately after its discovery in the goaf the chances of successfully coping with it are very small.

It is clear from the foregoing that the adoption of any system that would facilitate the separation of parts of the mine from the rest and at the same time

DIRECTION OF DIP.

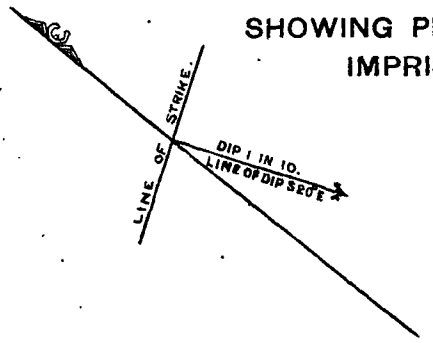
BARRIER OF SOLID COAL

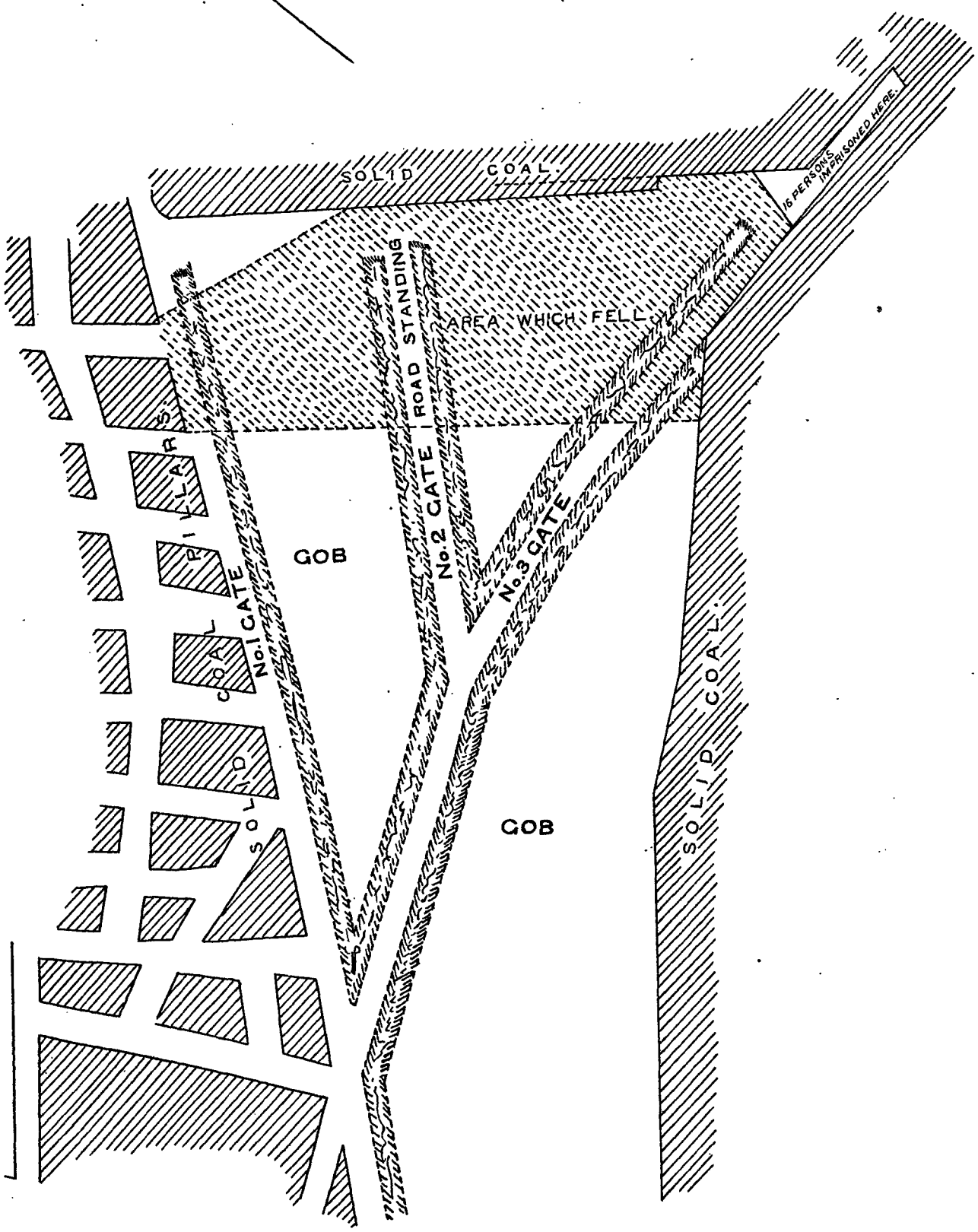
BARRIER OF SOLID COAL.

PLAN OF LONGWALL WORKINGS

SHOWING PLACE WHERE 16 PERSONS WERE IMPRISONED ON 17th JUNE 1909.

Scale 1 Inch = 50 Feet.





Reg. No. 2358 E. 10.—H—1,500.

obviate the difficulties mentioned above must be of immense practical value to the colliery manager. In the early days of active coal mining in England these difficulties presented themselves, and in 1809 Mr. Buddle, a famous North of England colliery manager, overcame them to a very great extent by the introduction of the Panel system, a system which effectually separated adjoining districts of the mine by leaving solid ribs of coal of varying thicknesses between them. Plate VI shows the principle of the system. The workings are laid out in districts or panels of a size to suit the local condition and when one panel is cut up into pillars, these are immediately extracted. Only 3 or 4 roads are made into each panel for the purposes of ventilation and haulage, so that in the event of fire or a sudden inrush of water the panel could be quickly dammed off. The ribs or barriers in the plate are 100 feet wide and are left unworked.

The early and comparatively cheap extraction of pillars helps, in mining parlance, to pay for the more expensive work of driving galleries and thus a low average cost is maintained throughout the life of the mine. Ventilation is rendered simpler and the principle of splitting the air is favoured, because each panel has a separate intake and return.

Creep is not a common danger in India, but should it occur in a panel its effects are not felt in other parts of the mine; the same may be said of crush.

There is no special method of extracting the pillars once the boundary of the panel has been reached. Any of the various methods in vogue may be used. That shewn in the plate assumes the roof of the seam to be of massive sandstone free from joints. Whichever method is adopted care should be taken not to allow pillars to get isolated, or in other words not to allow three sides of any one of them to be exposed to the open goaf at one time.

The introduction of panelling into Indian methods of mining coal cannot fail to be beneficial in every way. A minimum of risk in case of fire or sudden inrushes of water, the production of better coal and a quick return on the capital expended are amongst the chief advantages to be derived.

An instructive lesson is afforded by an incident which occurred during the year in some "Longwall" workings in India. Early in the morning of June 17th a "surface weight" came over the workings and the sound of breaking stone and cracking timber drove the workpeople, 16 in number, who were working in the face, to take refuge in a heading driven in advance of the face where they were imprisoned for some hours. The arrangement of the workings is shown on the annexed plan, Plate III, from which it will be seen that Nos. 1 and 3 gates were each supported by a pack on one side and solid coal on the other; while No. 2 gate was supported entirely on packs. The collapse of the roof which followed the "weight" extended over the area shewn hatched on the plan, the breaking edges of the fall coinciding with the solid coal, causing the face and Nos. 1 and 3 gates to be blocked with stone and cutting off the retreat of the workpeople. Beyond a slight lowering of the roof on the packs nothing happened in No. 2 gate and the road remained open.

It is important for those who contemplate the introduction of "Longwall" to remember that whenever possible gates should be packed through the gob, the edges of the solid coal being removed as far as convenient from them. If this had been done here all the roads would have remained open after the "weight" had passed over and the workpeople could have made good their escape.

Coal-cutting Machines in India.—Coal-cutting by machinery has not yet made much headway in Indian mines, and the chief incentive to its adoption will be the scarcity of labour. When it can be applied undercutting the seam is the most economical method of mining the coal. This had been practised in England for many years before the introduction of coal-cutting machines and the labour was accustomed to the various operations of blasting, timbering and packing. Change from hand-holing to machine-holing was therefore not a violent one. In India conditions are different. Hand-holing is practically unknown and instruction in the use of machines for Longwall work must be accompanied with instruction in the art of blasting, systematic timbering and building packs.

It has often been urged as a reason for the tardy application of machinery to coal cutting that Indian roofs generally are unsuitable. Most of the seams

in the Raniganj Series have a shaly sandstone covering, which breaks off short soon after the extraction of the coal. Such a covering offers the best facilities for working on the Longwall method. Where the seam exceeds 7 feet in thickness it should be arranged to extract the upper lift in the goaf, but this method is impracticable when the seam exceeds 10 feet in thickness. Roofs in the Barakar Series are generally composed of coarse-grained, massive sandstones, free from joints and smooth partings. They break off at long intervals after the extraction of the coal and give timely warning of their approaching collapse. On account of the great strength of the sandstone its weight is spread over large areas and moderate size goaves are unaffected. A liberal margin should, however, always be allowed, because a point is reached in the strongest roof when the weight destroys the cohesion of the particles composing it, unstable equilibrium is produced and collapse follows. The collapse of a strong sandstone roof is irresistible, so that the ordinary forms of artificial support are ineffectual, and the manner in which it would break the timber right up to the working face makes Longwall work unsuitable. Bord and Pillar satisfies its demands and is always adopted in Bengal, but unfortunately this system does not lend itself very readily to the application of mechanical coal cutters.

Percussive machines are being used in a few mines both for holing in the bottom or middle of the seam as the case may be, and shearing at the sides or midway between them; the coal is then blasted off. The only system however in which mechanical coal cutters have met with any measure of success is the Longwall, because the machine moves on a straight line for long distances and the fall of the coal is not hampered by a multiplicity of fast ends.

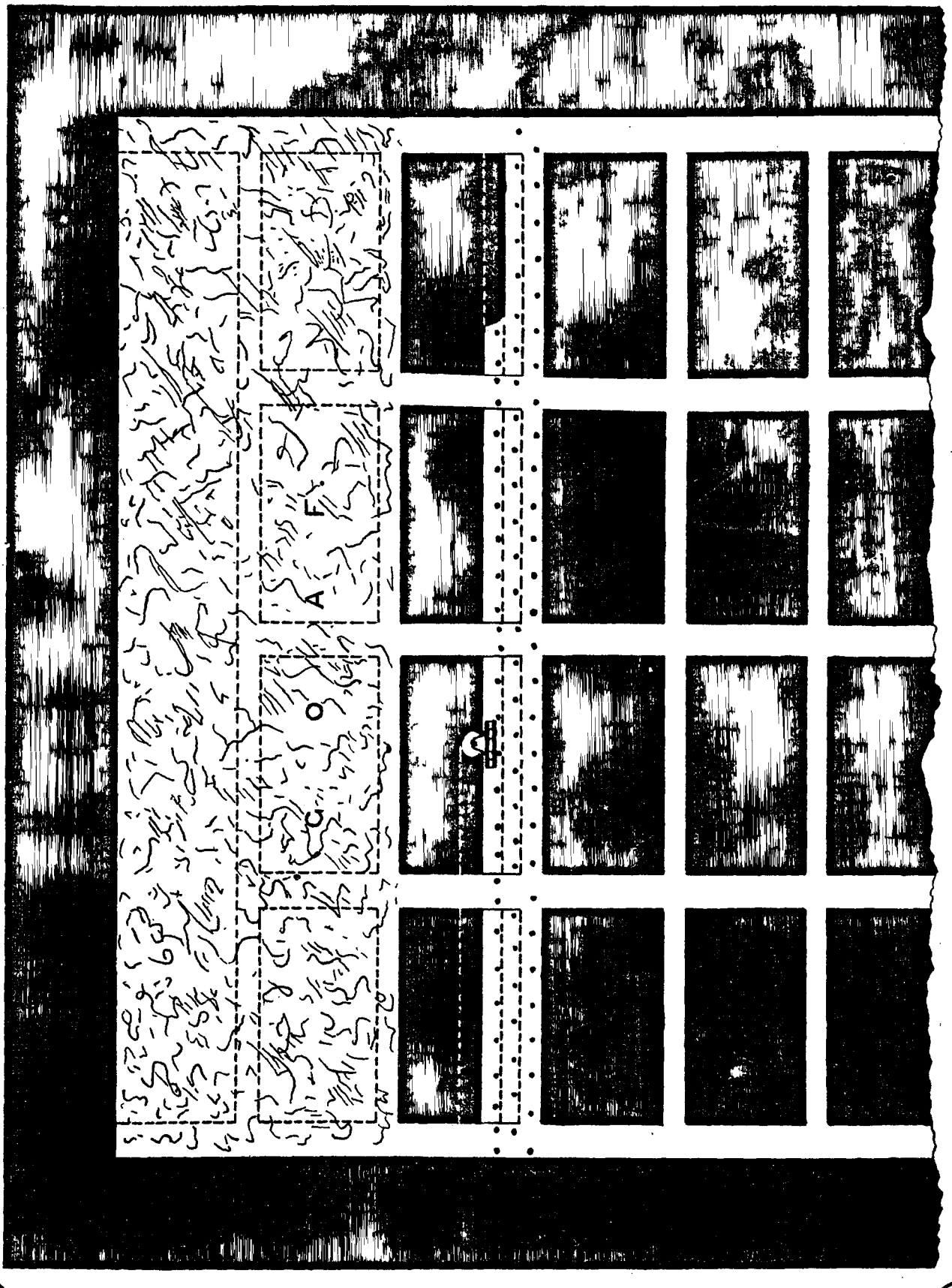
Plate VII shows a modification of the Bord and Pillar system to suit these requirements. The roof of the seam is strong sandstone and the districts to be worked are laid off on the Panel system. The width of the panel should be subordinated to the capacity of the machine; that is to say the length of face should be regulated by the distance the machine is capable of cutting, so that when it reaches the end of its cut the starting point has been cleared of coal ready for a new cut. The main objective is to prepare the panel ready for goafing in the shortest possible time. To this end all the headings may be driven as main galleries 5 feet wide and the bords as ordinary galleries 10 or 12 feet wide. The former are laid off 35 feet apart, centre to centre, and preferably on the strike of the seam, and the latter at any convenient distance to suit ventilation and tramming. When the panel has been completely cut up into pillars, extraction of the coal may commence. A lift, equal to the cut of the machine, is taken along the side of the main gallery nearest the boundary and a line of timber set. Successive lifts are cut and timbered in the same way until the boundary is reached at a distance of 40 feet from the standing edge of the main gallery. The timber is then drawn off and the area abandoned. Sterting from the edge, nearest this goaf, of the next main gallery these oparations are repeated until the second goaf joins the first, when all the props are withdrawn except an odd one here and there left to give warning of any movement in the roof. As the area of exposed roof increases it will be advisable to leave stooks or small pillars of coal in the line of the last cut as the limit of each goaf is reached to serve a purpose similar to that indicated above. Stooks are more sensitive than timber for foretelling an impending fall of roof and might be conveniently left on one side of each bord, so that the machine would have the other loose side of the bord to re-start from.

The system combines the advantages of the Bord and Pillar and Longwall systems as the roads are maintained in the solid and the dead charges arising out of packing and repairs to gob roads are not incurred, a new face is always ready for the machine to work on in the event of the last one being lost by the collapse of the goaf, and, the output does not suffer; a long continuous line of face is available for machine work, ventilation is easily and cheaply coursed through the workings, a large percentage of round coal is produced, work is concentrated and few tramming roads are necessary; extraction of the coal quickly follows the formation of the pillars, and, loss from crushed and weathered coal is obviated and finally the extraction of the pillars starts soon after the shaft pillar is formed.

MODIFICATION OF BORD AND PILLAR SYSTEM

OF WORKING FOR EXTRACTING COAL BY COAL CUTTING MACHINE FROM UNDER STRONG SANDSTONE ROOF.

Scale 1 Inch = 40 Feet.



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A peculiarity of Indian seams is that they frequently rest directly on sandstone and in these holing would have to be done in the coal with a corresponding loss of large coal. A few rest on fireclay in which the cut could be made and then most of the seam would be got as large coal. Thin seams of first class quality which are difficult or impossible to work successfully by hand can be profitably got by machines. A striking instance of this is seen at Nursamuda colliery where the Diamond Disc machine has been introduced.

The conditions at this mine are in every way suitable; the seam is only 3 feet 9 inches thick with a shaly sandstone roof next to the coal, so the system of Longwall working has been adopted. The machine undercuts the coal next to the floor to a depth of 5 feet 6 inches, and the coal is then blown down by explosives. This is perhaps not the first mine in which pure Longwall has been attempted in Bengal (the Longwall method is adopted in the Panjab mines), but it is the first successful application of the system, and also the pioneer in the adoption of a machine for carrying the coal away from the face and mechanically placing it in the tub. After the cutting machine has passed along and the coal has been broken up, the coal is thrown into a conveyor which consists of a sheet iron trough 150 feet long, inside of which is a travelling scraper in the form of an endless chain, slowly working along towards the end of the trough which is in the gate-road, and where it deposits the coal into a tub. As soon as a tub is filled it is taken away and another put in its place. The conveyor is worked by a small engine placed at one end of it in the gate-road, both it and the cutting machine being actuated by compressed air.

All the machinery, though under European supervision, is worked by the Indian miner who has readily adapted himself to the new methods. The new system has proved an unqualified success.

Some few seams in Bengal are full of slips and breaks that run through the coal from the roof to the floor and some have pronounced columnar structure; such seams are unsuitable for mechanical disc coal cutters, because the coal would fall on the machine while it is cutting and jam it. The bar machine, however, has in England been found to overcome this difficulty. A round bar with cutting teeth upon its periphery takes the place of the disc, and, as it is only some five inches in diameter it is not easily jammed.

Another peculiarity lies in the freedom we enjoy from the presence of gas in most of our seams. This removes at once one of the most serious objections to the use of electricity as a motive power for coal cutting machines and should go a long way to popularize electricity for this purpose. It should not be forgotten that in the early days of mechanical undercutting electric machines suffered severely from careless handling by inexperienced men, and a repetition in this country should be guarded against by employing only skilled labour about the machines.

Compressed air for the moment has caught the fancy of the Indian colliery manager and from many points of view gratifying results have been obtained from its use in coal-cutting machines. The experience gained of steam engines has made the native fitter wonderfully adept in picking up the details of a machine and effecting repairs, but the successful control and effective use of the machine demands higher mental capacity, and increased wages will have to be given to secure the right type of man. Owing to the short distance the workings are removed from the pit bottom and the comparatively shallow depths of Indian shafts there is not a serious loss in the pressure of the air during transmission and it is easy to get 40 to 50 lbs. pressure at the machines. Less than 40 lbs. greatly reduces the efficiency of the machine. As the distance to the working face increases it may be necessary to put in an additional receiver to collect the moisture in the air and render it drier and also to secure a uniform pressure. Safety in application and transmission are the great merits of compressed air, but in efficiency, in economy of boiler fuel and ease of transmission, electricity is far superior.

High cost of production still troubles the user of coal-cutting machines in India and it has been very often the sole reason for their withdrawal from many mines and a return to the old conditions. This is not unnatural, but it should be remembered that machines in use in England do the work of men earning eight to twelve shillings a day, while in this country they replace men earning only eight annas a day at the most.

The real gain to the colliery proprietor will manifest itself in a regular output, an increased production of large coal and a greatly diminished amount of labour to be controlled for the same output.

Taking out Pillars.—The roofs of the Indian coal seams are, as a rule, extremely good, and there is consequently a tendency to neglect setting proper support. In one case during the year, in the Dishargarh seam which is 20 feet thick, miners were found working on a continuous face line 100 feet long at an average distance of 34 feet from the nearest line of pillars and under a roof unprovided with any artificial means of support. An area of over 3,000 square feet of exposed roof is surely somewhat straining the margin of safety and it should hardly be necessary to call the attention of colliery officials to the risk attending such a practice. Timber must be set, at least for the purpose of giving warning of any movement of the roof.

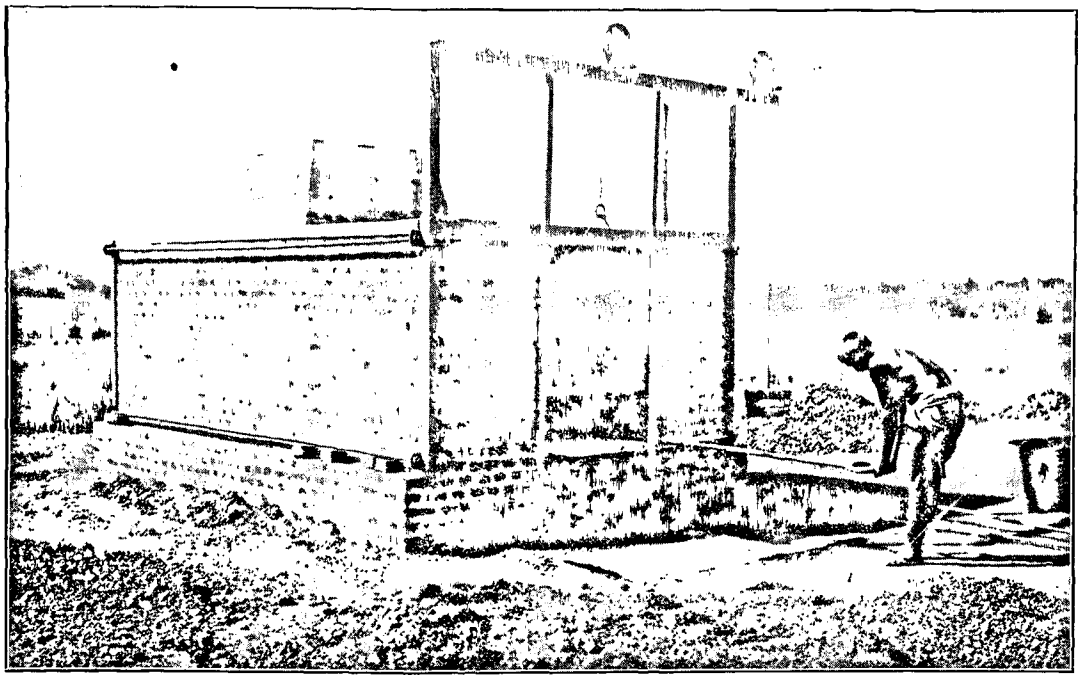
Accident after accident happens in this work. At one time it is a question of miners trespassing beyond fences in order to get easy coal; at another the system is at fault. Too many accidents are due to the custom of allowing several pillars to be worked at one time causing very wide places and rendering the small pillars so unstable that sometimes large masses of coal fall off them after only a few blows with a pick have been struck.

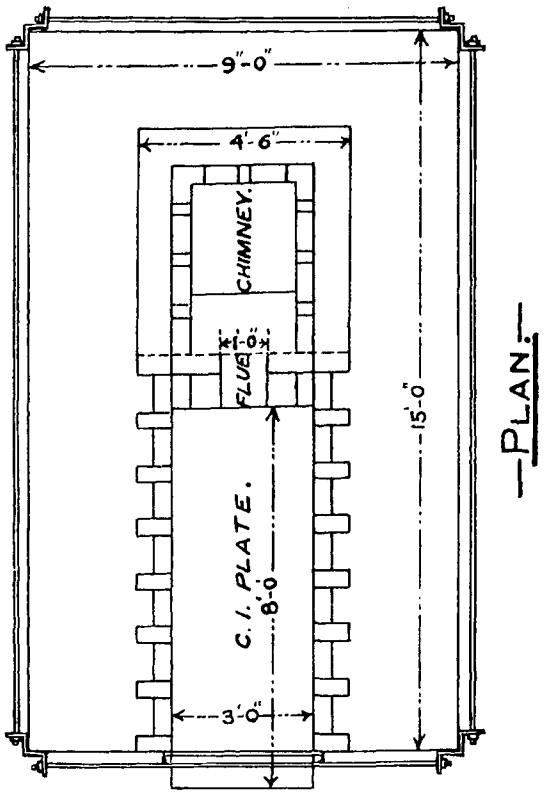
Soft Coke.—An encouraging feature of the coal trade during the year has been the growing demand for soft coke, and its stimulating influence has helped to modify the depression following the boom of 1908. In the large towns where the smoke nuisance has become acute and the question of a supply of cheap wood fuel one of anxiety, consumers' attention is being turned to the possibilities of soft coke as a smokeless fuel for domestic and boiler purposes.

Even villagers are beginning to recognise that the use of coal in the form of soft coke permits them to retain their open-mouthed cooking vessels and primitive *choolahs* and in the colliery villages large heaps of coal, the pooled allowances of many miners, may be seen carbonising in the open to yield a more or less smokeless fuel. Unlike the hard coke industry which can only grow with the expansion of the iron and steel trades there is an immediate field for enterprise in soft coke manufacture waiting only to be exploited. That the question will become of great importance in the near future is undoubted. Already the problem of whether approved appliances should be adopted for the combustion of raw coal, or whether the coal should be converted by carbonisation into smokeless fuel in the coalfields and conveyed to the large towns for consumption is beginning to be solved in favour of the latter; but unfortunately it is attended, under the present system of carbonisation, with serious losses. Only large coal is used and the valuable gases are allowed to escape into the atmosphere. This is a wasteful process, because the rich products such as tar, sulphate of ammonia, benzole, etc., recoverable by dry distillation, are lost in the direct combustion of raw coal; and very often the outer shell only of the large lumps of coal is carbonised, leaving the interior charged with unburnt gases.

There are dry distillation ovens in the market which produce a perfectly smokeless fuel from small coal and at the same time recover all the bye-products, but their high cost will prevent their introduction here for some time to come, although there are signs that the qustion is engaging the attention of our leading coal companies. In the meantime the sketch of a simple oven, given in Plate VIII for the preparation of smokeless soft coke out of small coal may commend itself to many managers. The $1\frac{3}{3}$ inch C. I. sole plate should be made in two pieces, each 4 feet by 3 feet, to facilitate transport. The object of the plate is to retain the heat after the charge has been started, so as to quickly raise the unburnt coal, as it is turned over in the oven, to a comparatively high temperature. The rest of the sketch is self-explanatory.

Coal of about $1\frac{1}{2}$ inch cubes is best suited to the production of soft coke by this process, but it should be remembered that only coals which will successfully fuse can be used. Carbonisation is facilitated by gently lifting the charge every 15 minutes or so to admit air into the interior of the charge by means of the pricker, which is made of ample size to avoid unnecessarily breaking up the cohering mass, and should be complete in from 6 to 8 hours, according to the volume of volatile matter to be driven off. The photograph shews the pricker being used. It should not be forgotten that in the production of





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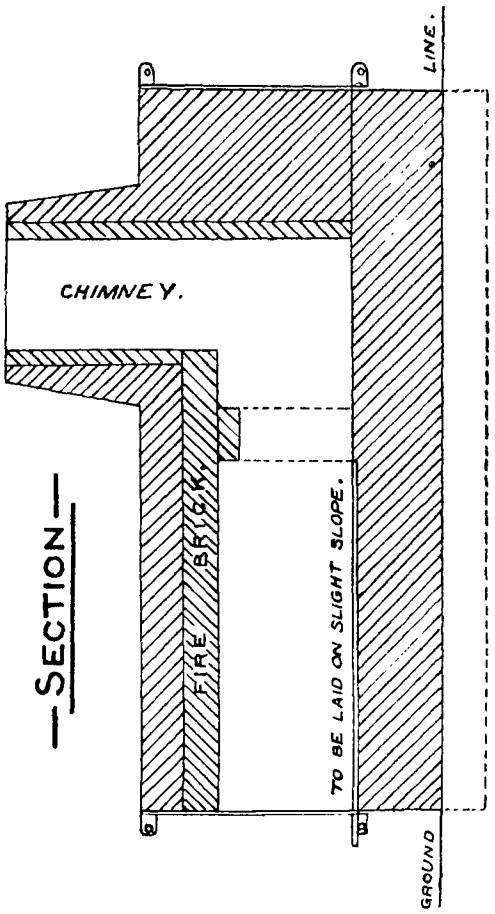

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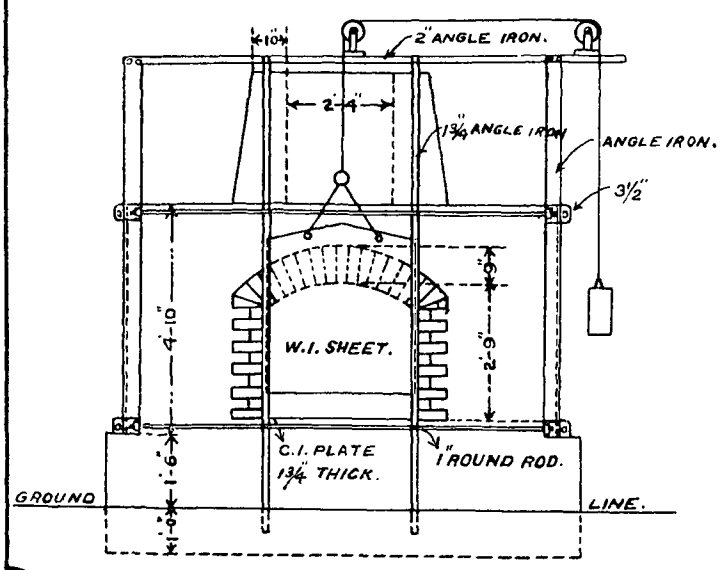
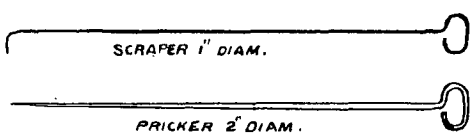


—FRONT ELEVATION.—



OVEN
FOR MAKING SOFT COKE.

Scale ¼ Inch = 1 Foot.

Engraved & printed by

Survey of India Offices, Calcutta, 1911.

hard coke the last traces of volatile matter are expelled ; if soft coke is to be produced the charge must be withdrawn before the last traces are driven off. Out of 100 tons of coal it is possible to get from 65 to 70 tons of soft coke by the use of this oven.

In a country like India with its long transports it is essential that research should be directed to the production of hard-bodied coke to withstand the violent shaking of the journeys. Enterprising companies contemplating the installation of recovery ovens will find the market for tar well assured, but sulphate of ammonia has yet to make its reputation here. When it is considered that 380 lbs. of this salt is required to amply fertilize an acre of land at a cost of Rs. 26 at current prices it is perhaps not to be wondered at that the simple "ryot" is content to leave the ground to fertilize itself. Outside India however the demand for this salt is well sustained.

The soft coke trade is in its infancy and requires careful nourishing. If a permanent trade is to be established only smokeless fuel of good quality should be supplied to the consumer.

Hard coke is being made at many Bengal mines by the old method of open-topped rectangular ovens, which requires a long time for the conversion of the coal into coke. There are signs that modern and scientific methods are to take the place of the old. Bye-product ovens have been erected at the East Indian Railway Company's Giridih mines and the Bengal Iron and Steel Company's Barakar Works. While the latter have not yet been put into operation, the former are working very successfully. At Giridih the waste gases from the ovens are being utilised in internal combustion engines for generating electricity which will be used for lighting, hauling, pumping, screening and driving the machinery in the workshops.

Tar and sulphate of ammonia are recovered and find a ready sale, but the latter only outside of India.

Shafts.—My attention has been drawn to several instances in which the cages in the shafts have very little clearance between them. Usually there is one inside guide-rope attached to each cage by a shoe fixed close to the cage corner, and in many cases the cages have to be steadied to prevent colliding at the meetings. Where the cages have been hung with little clearance, it is much safer to hang two inside guides parallel with and unconnected to the cages and hung in such a position that they are about a foot from the cage ends. Rubbing pieces should be fixed along the entire length of the cages.

I have often been asked if wire rope guides are quite safe in moderately deep shafts : and, is there no risk of vibration being set up and augmented to such an extent that the cages either catch each other or the sides of the shaft. Some time ago I made experiments with wire rope guides over 2,000 feet long. In this particular case, to minimise any tendency of the ropes to vibrate in unison, they were unequally weighted at the shaft bottom, and it was found that the cages, however loaded, never left the perpendicular. It should be remembered in connection with this, that the velocity of a wave in a rope of that length, suitably weighted, would only be about 400 feet per second. I would advise managers who use this form of guide, to weight them unequally ; to take care that the weights in the shaft bottom are free to move and not choked up with dirt or small coal ; and to be quite certain that the pit frame is designed of sufficient strength to carry the weight put upon it. In the case of new shafts, the pulleys should be spaced so that ample clearance is given between the cages, as alterations are difficult to make later.

Machinery.—In many of the native owned mines, even where tubs are taken into the mine, the rails are only carried inbye a short way, which involves carrying the coal for long distances—a most uneconomical proceeding. Much of this labour could be minimised at a very small expenditure.

Many colliery proprietors are beginning to find that there is a demand for properly sorted and sized coal, and as a result screening plants are being erected at a few Bengal mines. This will necessitate the provision by the Railway Companies of open wagons or wagons that can be opened at the top.

Much of the coal wrought in Bengal suffers severely by the long railway journeys, and arrives at its destination with a large percentage of dust and small coal. Briquetting appears to be the only cure for this evil, and, when it is resorted to the "bricks" should be manufactured of a size suitable for the class

of work required, those for ordinary consumption without having to be broken into pieces. For shipping it should be remembered that briquettes are not liable to spontaneous combustion, and coals that are otherwise subject to this danger can be safely shipped in this form. Since the advent of bye-product coke ovens there is now in the residuals a binding agent for their manufacture close at hand. Bengal coal is certainly travelling far afield in India. A reasonable railway rate has apparently fostered the consumption as far as the Panjab. The same spirit would doubtless much increase the sale of soft coke in the provinces far away from Bengal.

Electricity.—The use of electricity is making some headway in Bengal mines. At 13 groups of mines there are installations of 10 horse power up to 400 horse power capacity, the power being used for hauling, pumping, screening and lighting.

Deeper working.—Several new and deeper shafts are being sunk, which will open up new conditions in mining. At such places a proper system of ventilation will have to be secured, which, in most cases will mean the application of an exhaust fan. Explosive gas is already showing itself in the deeper workings, and the use of safety lamps of an approved type will become imperative. Gas is often found in small galleries and reported absent in the larger ones ; the reason being that in the latter it becomes diffused and mixed with the air to such an extent that it cannot ordinarily be observed on the flame of a safety lamp. Deeper mines will mean drier workings, and I must again warn colliery managers that it has been abundantly proved that naked lights and coal dust are explosive agents.

It is cause for congratulation that Indian mining methods have undoubtedly improved during the last few years. Officials have become better trained; managers seem to take a keener interest in their work and have higher ideals ; the native managers welcome being shown better ways of doing things and manifest a desire to work in accordance with the spirit of the Mines Act. This is a happy augury for the future.

OFFICIAL DUTIES.

There has been no change in the personnel of the staff during the year. All the Inspectors have devoted the whole of their time to their duties, often making very long days, and have endeavoured to keep in touch with every form of mining within the circles allotted to them. Their work becomes increasingly important as mining generally, and coal mining in particular, is assuming a different aspect to that of a few years ago. Deeper shafts ; more scientific methods of pillar extraction ; the necessity for and application of modern machinery both above and below ground, have all raised problems that require serious consideration, and the best advice that only a practical acquaintance with the subjects would allow the Inspector to give.

In a country like India where mining is still to a great extent in its early youth, the Inspector must always be prepared to be an adviser, and the condition of the mines in his circle will become more and more a reflection of the officer's capacity and enthusiasm in his work.

In addition to the ordinary routine of work, visits upon invitation, and inspections and reports have been made upon the mines in the Native States of Hyderabad and Bikaner.

Land Acquisition (Mines) Act cases, in connection with the proper support of the Railways in the coalfields, have neither lessened in number nor importance.

The removal to Dhanbaid has brought the head-quarters of the Department in closer touch with colliery officials and will thus, it is to be hoped, have a stimulating effect and tend to promote good mining. The clerical staff of the Department has worked well, and has not grudged the extra time found necessary for carrying on the work.

I have the honour to be,

SIR,

Your most obedient servant,

J. R. R. WILSON,

Chief Inspector of Mines in India.

APPENDIX I.

Fatal Accidents, 1909.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			EXPLOSIONS OF FIRE-DAMP—(*6 deaths*).			
1	9th May, 4-45 A.M.	Sitalpur Mine, Dishargarh P. O.	Bengal Coal Co., Ld.	Kangal Bauri, (*m.*), 30, *Miner*.	Coal	The deceased and another were warned not to enter a certain main gallery on account of gas. They took no notice however, and entering the gallery with a naked light fired the gas and were so severely burnt that Kangal died next day. *See Report, page 4.* Inspection and inquiry made.
2	12th June, 4 A.M.	Tikak Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Baijnath, (*m.*), 34, Domon, (*m.*), 37, *Bhoskawallas*. Felu, (*m.*), 29, Boron, (*m.*), 38, *Sirdars*.	Coal	A dam which stopped off a fire in the old goaf had been burnt out and smoke was noticed in the workings. They were endeavouring to find out from where the smoke was coming, when an explosion occurred from the effects of which these three men subsequently died. *See Report, page 4.* Inspection and inquiry made.
3	30th December, 9-30 A.M.	Chota Dhemo Mine, Dishargarh P. O.	Baman Dass Mukherji	Chandi Majhi, (*m.*), 25, *Coal-cutter*.	Coal	In a mine in which gas had not been found during the last 8 years he entered a gallery that had been standing 12 hours with a naked light and fired an accumulation of gas. He was burnt severely and died on the 7th January 1910. *See Report, page 5.* Inspection and inquiry made.
			FALLS OF ROOF AND SIDES—(*57 deaths*).			
			(*a*) **Falls of roof**—(*31 deaths*).			
4	7th February, 11-30 P.M.	Jamgram Mine, Panuria P. O.	Barakar Coal Co., Ld.	Majha Majhi, (*m.*), 30, *Coal-cutter*.	Coal	He was one of a gang widening galleries and whilst cutting at a corner of a pillar a fall of roof took place and he was killed on the spot. *See Report, page 5.* Inspection and inquiry made.
5	11th February, 1-30 P.M.	Damudapur Mine, Nandi P. O.	Bengal Coal Co., Ld.	Toja Chamar, (*m.*), 38, *Coal-cutter*.	Coal	He went beyond a fence and while filling loose coal several tons of coal fell and killed him on the spot. Inspection and inquiry made.
6	15th February, 12 Noon.	Kendwadih Mine, Kusunda P. O.	East Indian Coal Co., Ld.	Karru Roy, (*m.*), 24, *Miner*.	Coal	Killed by a fall of coal from the roof and side while cutting roof coal. Inspection and inquiry made.
7	2nd March, 3 A.M.	Tikak Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Tiru Gore, (*m.*), 32, *Basket-filler*.	Coal	The deceased was dragging baskets when some coal fell on him and injured him so seriously that he died the same day. Inspection and inquiry made.
8	18th March, 2-30 P.M.	Bhatdih Mine, Mohoda P. O.	Bengal Bhatdih Coal Co., Ld.	Gangadin Rai, (*m.*), 33, *Miner*.	Coal	He was cutting floor coal when a piece of roof, 7′ 6″ × 3′ × 10″, fell on him killing him instantaneously. Inspection and inquiry made.

Fatal Accidents, 1909—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*contd.*			
			(*a*) Falls of roof—*concld.*			
9	23rd March, 3 P.M.	Nayeetaur Mine, Tisri P. O.	Bhagwan Das Marwari	Nazir Kalal, (*m.*), 30, *Miner.*	Mica	Killed by a fall of roof.
10	11th April, 1 P.M.	Square No. 31-J Mine, Kodarma P. O.	Bengal Mica Syndicate	Khedon Ghatwar, (*m.*). 25, *Coolie.*	Mica	While filling away fallen material from the mouth of an inclined shaft about 80 lbs. weight of schist fell from the roof upon his head and killed him instantly. Inspection and inquiry made.
11	1st May, 9 A.M.	Pipratand Mine, Katrasgarh P. O.	Pipratand Coal Co., Ld.	Sugia Majhain, (*f.*), 26, *Coal-carrier.*	Coal	She and another woman were filling baskets of coal previously ripped from the roof when about 1½ tons of coal fell on them. Sugia died that night, the other escaped with slight injuries. Inspection and inquiry made.
12	8th May, 1 P.M.	Joba Mine, Raniganj P. O.	Eastern Coal Co., Ld.	Kalka Kori, (*m.*), 33, *Coal-cutter.*	Coal	He returned to his gallery after blasting before the smoke had cleared away, and began to knock down overhanging coal. He was struck by the fall of a mass of coal loosened by the blast and was killed on the spot. Inspection and inquiry made.
13	8th May, 7-45 A.M.	Tikak Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Dollu Kosta, (*m.*), 32, *Basket-filler.*	Coal	A fall took place while he was filling coal burying him. He was dead when got out. Inspection and inquiry made.
14	12th May, 8 A.M.	Dhobidih Mine, Giridih P. O.	Bengal Giridih Coal Co., Ld.	Punia Majhi, (*m.*). 45, Leboa Kole, (*m.*), 30, Sanoa Kole, (*m.*), 35, Rewa Meah, (*m.*), 50, *Miners.*	Coal	They were preparing to start work in the head end of a gallery when roof stone measuring 20′ × 9′ × 5½′ fell from between two inclined slips and killed all the men outright. *See Report, page 5.* Inspection and inquiry made.
15	14th May, 4 P.M.	Akhalpur Mine, Nandi P. O.	Hariladih Coal Co., Ld.	Budhi Majhain, (*f.*), 30, *Coolie.*	Coal	A miner was wedging down roof coal from a height of about 10 feet. She was sitting below and thought she was clear, but a small piece of coal struck her on the knee and fractured the joint. She received proper medical attention, but her relatives insisted on using their own dressings and she died from blood poisoning eleven days later. Inspection and inquiry made.
16	29th May, 5 A.M.	Dandot Mine, Dandot P. O.	North Western Railway.	Khuda Bux, (*m.*), 30, *Carpenter.*	Coal	During cogging operations at a "fall" a piece of stone fell from the roof upon the victim's leg and broke it. Traumatic fever supervened and he died five days later. *See Report, page 6.* Inspection and inquiry made.
17	29th May, 8 A.M.	Sodepur Mine, Sitarampur P. O.	Bengal Coal Co., Ld.	Hari Ram Mohora, (*m.*), 40, *Head Sirdar.*	Coal	Seven persons, including the day and night shifts sirdars, were engaged withdrawing timber from a newly made goaf when the roof fell and buried them all. The roof had been weighting for some hours previously; but this only made them work harder to try to get the timber out before it fell. *See Report, page 6.* Inspection and inquiry made.

				Dukhun Burhi, (*m.*), 38, *Sirdar.* Khuju Meah, (*m.*), 36, Tulu Meah, (*m.*), 35, Jugal Burhi, (*m.*), 38, *Propping mistries.* Talu Koiri, (*m.*), 17. Kangali Meah, (*m.*), 37, *Propping coolies.*		
18	1st June, 1 A.M.	Sanctoria Mine, Dishargarh P. O.	Bengal Coal Co., Ld.	Hiru Turi, (*m.*), 40, *Miner.*	Coal	He went under a canch of roof coal that he was cutting, to break a large piece of coal he had just cut down, when another piece of coal fell off the canch between two cleat faces and caught him on the back. He was injured so seriously that he died three hours later. Inspection and inquiry made.
19	6th June, 5-30 A.M.	Angarpatra Mine, Katrasgarh P. O.	Union Coal Co., Ld.	Kinu Rai, (*m.*), 35, *Miner.*	Coal	He was trimming off the side of a gallery which had joined another, when a piece of coal. 7′×1′ 4″×2′ 5″, fell on him from a height of six feet and killed him instantaneously. Inspection and inquiry made.
20	18th August, 1-30 P.M.	Brahmanbarari Mine, Jharia P. O.	East Indian Coal Co., Ld.	Jarai Kurmi, (*m.*), 36, *Coal-cutter.*	Coal	A shot had been fired to blow down a pillar and a piece of coal 10′×10′×2′ was left in the roof. The place was then fenced off. Two hours later this coal began to work, and the sirdar shouted to every one to stand back. Deceased however ran under the fence and was caught by a piece of the coal as it fell. Inspection and inquiry made.
21	3rd September, 2 P.M.	West Ledo Valley Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Choramon Ghatwal, (*m.*), 27. *Basket-filler.*	Coal	About 12 cwts. of earth fell from the roof on to him while trying to escape on the warning of a subordinate official. He was dead when his body was recovered. Inspection and inquiry made.
22	4th September, 2-30 A.M.	Panchgatchia Mine, Sitarampur P. O.	Lutchipur Coal Co., Ld.	Gopi Majhi, (*m.*), 32, *Miner.*	Coal	Deceased contrary to regulations entered some old workings to get a few baskets of coal to complete his tub. Premonitory symptoms of a fall warned him, but he refused to take any notice and the roof fell and buried him. Inspection and inquiry made.
23	9th October, 5 A.M.	Sudih Mine, Sitarampur P. O.	Baraboni Coal Concern, Ld.	Charan Majhi, (*m.*), 22, *Coal-cutter.*	Coal	He broke down a fence and entered a gallery that had been stopped the day previous on account of bad roof. After cutting some coal he heard a piece of stone fall and put up his pick to test the roof when a large area of stone fell and struck his pick and drove it into his side. He died three hours later. Inspection and inquiry made.
24	11th November, 3 P.M.	Bamanband Mine, Chowkidanga P. O.	Bamanband Coal Co., Ld.	Idhan Sheik, (*m.*), 20, *Main heading driver.*	Coal	He was killed by a fall of shale roof, 2′ 6″ in thickness. Inspection and inquiry made.
25	2nd December, 3-30 P.M.	Serampur Mine, Giridih P. O.	East Indian Railway Co.	Jainath Dosadh, (*m.*), 30, *Coal-cutter.*	Coal	He entered a fenced place to cut coal and was caught by the Deputy Overman and turned out. Soon after this he returned and commenced to cut one of the "nobs" supporting a "fall" of coal when the roof fell and buried him. Inspection and inquiry made.
				(*b*) Falls of side—(*26 deaths*).		
26	14th January, 2 P.M.	New Kesalpur Mine, Katrasgarh P. O.	Bepin Behari Banerji	Narain Rajvar, (*m.*), 35, *Miner.*	Coal	He left his proper working place, crossed a fence, and commenced to cut coal in a disused gallery, when a piece of coal fell upon him from a height of 6 feet and fractured his skull. He died in two hours. Inspection and inquiry made.

Fatal Accidents, 1909—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES —*concld.*			
			(*b*) **Falls of side**—*concld.*			
27	16th January, Noon.	Sodepur Mine, Sitarampur P. O.	Bengal Coal Co., Ld.	Pano Bauri, (*m.*), 44, *Miner.*	Coal	Deceased wandered into a disused, but unfenced part of a quarry and commenced to cut coal. Apparently he had been at work a few minutes only when the side collapsed and buried him. Inspection and inquiry made.
28	16th January, 2-30 P.M.	Bhalgora Mine, Jharia P. O.	Bhalgora Coal Co., Ld.	Sham Lal Kahar, (*m.*), 36, *Miner.*	Coal	The deceased and another miner left the pillar which they and others were systematically getting and went to another which had been partially got, when about a ton of coal fell from a height of 9 feet killing Sham and injuring his companion. Inspection and inquiry made.
29	22nd February, 11 A.M.	Benahir Mine, Jharia P. O.	Standard Coal Co., Ld.	Nilmoni Majhain, (*f.*), 14, *Coal-carrier.*	Coal	A heavy piece of coal became detached from a back slip in a pillar and fell upon her killing her outright. It is not clear whether she was walking past the place, or whether miners were robbing the pillar. Inspection and inquiry made.
30	23rd February, 8 A.M.	Gopalichak Mine, Jharia P. O.	Gopalichak Coal Co., Ld.	Budhu Meah, (*m.*), 25, *Miner.*	Coal	Whilst robbing a pillar a piece of coal, 10′×4′×3′ 6″ to 0″, suddenly fell on the deceased and killed him instantaneously. Inspection and inquiry made.
31	26th February, 6 P.M	Bamankua Mine, Shivrajpur P. O.	Bamankua Manganese Co., Ld.	Bhani Tey Singh, (*m.*), 30, *Coolie.*	Manganese	He and three others were illegally working at a face which had become unsafe when part of it crumbled down and a large quantity of overburden fell and buried them all. Bhani died in a few hours. Inspection and inquiry made.
32	3rd March, 10 A.M.	East Ledo Valley Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Sona, (*m.*), 32, *Opening man.*	Coal	He was pulling coal when about two tubs of coal rolled from the side about 4 feet high and hit him on the forehead. He died from the effects on the 8th March. Inspection and inquiry made.
33	3rd March, 3 P.M.	Muttigurra Mine, Nowagarh P. O.	Muttigura Coal Co., Ld.	Gangla Beldarin, (*f.*), 37, *Coal-carrier.*	Coal	Her body was found inside a fence near a large piece of coal which had fallen from the side of a quarry. She had probably crossed the fence to pick up coal when the fall took place and killed her. Inspection and inquiry made.
34	17th April, 12-10 P.M.	Murulidih Mine, Mohoda P. O.	Bengal Coal Co., Ld.	Bhobani Gowalla, (*m.*), 21, *Timbering coolie.*	Coal	He was apparently illegally getting coal at a pillar, when a piece fell from the corner and dropped upon him inflicting such injuries that he died before removal from the mine. Inspection and inquiry made.
35	1st May, 4 P.M.	Lagunwa Mine, Kodarma P. O.	Dickson Irwin (Kodarma) Mica Mining Syndicate, Ld.	Bhola Singh, (*m.*), 30, *Miner.*	Mica	A piece of mica schist fell from the hanging wall of a drift driven in the pegmatite vein, struck the deceased on the back and pushed him on to a projecting piece of rock which entered his groin to a depth of two inches. He died shortly afterwards from the effects of the injuries. Inspection and inquiry made.
36	11th June, 2-30 A.M.	Tikak Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Rohon, (*f.*), 22, *Basket-carrier.*	Coal	Whilst she was carrying a basket of coal, a piece of side weighing about 3 cwts. fell striking her on the back and injuring her spine. She died from the effects of the injuries on the 8th September. Inspection and inquiry made.

37	11th June, 9 A.M.	North Kustore Mine, Kusunda P. O.	Kusunda and Nayadi Collieries, Ld.	Nanku Gope, (*m.*), 40, *Stone-cutter.*	Coal .	A sirdar noticing a loose piece of coal told him to bring a pick. As he brought it he was told to keep to the left-hand side. He remarked that it seemed all right and came in on the right hand side when a piece of coal 3′×3′×8″ fell on him and injured his head. He died a few minutes later. Inspection and inquiry made.
38	24th June, 11 A.M.	Square 24-M Mine, Kodarma P. O.	East Indian Mica Mining Co., Ld.	Punta Gope, (*m.*), 16, Koro Singh, (*m.*), 20, *Miners.*	Mica .	The two men were following the vein and had gone 7 feet deep when a piece of the overburden fell and buried them. Punta was killed on the spot and Koro died on the 3rd July. Inspection and inquiry made.
39	28th June, 11-30 P.M.	Salanpur Mine, Sitarampur P. O.	Borrea Coal Co., Ld.	Matla Manjhi, (*m.*), 22, *Coal-cutter.*	Coal .	Whilst robbing a pillar in disused workings, a column of coal fell from the side and injured the deceased who died 34 hours later from the effects of the injuries. Inspection and inquiry made.
40	4th July, 3 P.M.	Darabzangi Mine, Quetta P. O.	Baluchistan Mining Syndicate, Ld.	Haste, (*m.*), 35, *Coolie.*	Chromite .	While he was digging on the side of the quarry, a boulder fell on his back injuring him so seriously that he died an hour later.
41	5th July, 4 P.M.	Bujwa Mine, Kodarma P. O.	Floyd Brothers . .	Thalu Kahar, (*m.*), 20, *Miner.* Tini Meah, (*m.*), 15, *Coolie.*	Mica .	While working near the entrance to an old mine, some 100 cubic feet of earth fell from the side and buried them. Inspection and inquiry made.
42	22nd July, 7 P.M.	Serampur Mine, Giridih P. O.	East Indian Railway Co.	Rit Lal Roy, (*m.*), 25, *Miner.*	Coal .	A piece of coal, loosened by a sudden goaf weight, fell upon him just as he was trying to escape the effects of the weight. He died shortly after from the effects of his injuries. Inspection and inquiry made.
43	22nd July, 7-30 P.M.	Tikak Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Budhon, (*m.*), 31, *Basket-filler.*	Coal .	He was filling a basket when about 4 or 5 tons of side fell burying him completely and suffocating him. Inspection and inquiry made.
44	24th July, 8-15 A.M.	Bansdeopur Mine, Kusunda P. O.	Bansdeopur Coal Co.	Sagram Manjhi, (*m.*), 22, *Coal-cutter.*	Coal .	Fifteen tons of coal fell off the corner of a pillar on to him and two others, killing him and slightly injuring the others. Inspection and inquiry made.
45	10th September, 2-30 P.M.	Raniganj Mine, Raniganj P. O.	Bengal Coal Co., Ld. .	Chandra Baurini, (*f.*), 45, *Dust-loader.*	Coal	She was one of a gang of sixteen women employed in picking up loose coal in an area of abandoned pillars where a slow creep was in progress. About half a ton of coal fell from a pillar and crushed her so severely that she died the same day. Inspection and inquiry made.
46	18th September, 9-50 A.M.	Sutikdih Mine, Bhujudih P. O.	Sutikdih Coal Co., Ld. .	Khenti Baurini, (*f.*), 26, Kodi Baurini, (*f.*), 24, , *Coal-carriers.*	Coal .	They were carrying coal for two miners who left their proper working places to go to a corner of a pillar. While one of the miners was cutting at the lower portion of the corner, about one ton of coal fell off the top portion on to the two women, killing one instantaneously and injuring the other so severely that she died at 2 P.M. Inspection and inquiry made.
47	15th October, 2-30 P.M.	Salanpur Mine, Sitarampur P. O.	Borrea Coal Co., Ld. .	Tiku Singh, (*m.*), 30, *Propping mistry.*	Coal .	While deceased was withdrawing a stretcher bar against orders, a piece of coal fell from the side upon his head and fractured his skull killing him outright. Inspection and inquiry made.
48	20th December, 12-30 A.M.	Bulliari Mine, Jharia P. O.	East Indian Coal Co., Ld.	Shovan Hazam, (*m.*), 30, *Miner.*	Coal .	While filling out slack coal. he went beyond a fence and while there a slab of coal, about ½ cwt., fell from the side of a pillar and struck him, killing him on the spot. Inspection and inquiry made.

Fatal Accidents, 1909—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			IN SHAFTS—(*30 deaths*).			
			Overwinding—(*1 death*).			
49	8th November, 10-20 P.M.	Burra Dhemo Mine, Sitarampur P. O.	Damuda Coal Co., Ld.	Kanhu Majhi, (*m.*), 30, *Stone-cutter.*	Coal	Overwind of a hoppit containing four sinkers occurred at a sinking shaft 201 feet deep. The apparatus was fitted with a detaching hook, but before it had time to come into operation the deceased jumped from the bucket obviously with the intention of springing upon the banking level and, misjudging his distance, fell to the bottom of the shaft and fractured his skull. The other three were saved. *See Report, page 7.* Inspection and inquiry made.
			Ropes and chains breaking—(*2 deaths*).			
50	20th April, 5 A.M.	North Anantapur Mine, Morriston P. O.	North Anantapur Gold Mines, Ld.	Mallapah, (*m.*), 35, Maboob Khan, (*m.*), 25, *Coolies.*	Gold	Whilst hauling stuff in a shaft, the pin of the shackle which connected the winding rope and skip snapped, and the skip dropped to the bottom on them. Mallapah was killed outright and the other succumbed later. Inspection and inquiry made.
			Whilst ascending and descending by machinery—(*7 deaths*).			
51	15th January, 7-30 P.M.	North Anantapur Mine, Morriston P. O.	North Anantapur Gold Mines, Ld.	K. Ramaswami, (*m.*), 22, *Rock-loader.*	Gold	Instead of going to the surface by the shaft ladders, he jumped into the skip and gave the signal for rock raising. The engineman after raising about 20 feet felt a jerk and stopped the skip. Deceased was found dead in the bottom of the skip with his head fractured. Inspection and inquiry made.
52	21st January. 6-30 A.M.	Bhuskajuri Mine, Asansol P. O.	Bhuskajuri Coal Co., Ld.	Ganpat Khoira, (*m.*), 26, *Coal-cutter.*	Coal	He fell out of a descending cage and was killed on the spot. The cage was fitted with a guard chain at each end, but it is probable that the banksman neglected to fasten them. Inspection and inquiry made.
53	27th May, 7-30 P.M.	Kendwadih Mine, Jharia P. O.	Hariladih Coal Co., Ld.	Agho Kole, (*m.*), 33, *Miner.*	Coal	He got upon a cage as it was being raised from the pit bottom, and failing to secure a hold fell back upon his head, and sustained a fracture of the skull. He died a few hours later. Inspection and inquiry made.
54	30th June, 8 A.M.	Gopalichak Mine, Jharia P. O.	Gopalichak Coal Co., Ld.	Khagu Dome, (*m.*), 36, *Sinkers' sirdar.*	Coal	He got into a bucket at a landing and the signal was given to lower. Instead of being lowered he was wound to the top of the pit, which is out of use, the sinking being conducted from the landing. He struck a beam at the pit top and was found dead in the bucket. Inspection and inquiry made.
55	16th July, 9-30 P.M.	Kustore Mine, Kusunda P. O.	Raniganj Coal Association, Ld.	Tilakdhary Keot, (*m.*), 40, *Miner.*	Coal	While ascending a shaft and within about 4 feet of the surface he fell out of the cage and dropped to the bottom of the shaft, 280 feet below, and was killed instantly. Inspection and inquiry made.

56	21st October, 1-30 A.M.	Lutchipur Mine, Sitarampur P. O.	Damuda Coal Co., Ld.	Mora Kole, (*m.*), 25, *Onsetter.*	Coal	While descending a shaft with two companions deceased fell out of the cage and was killed. There is a suspicion that he had been drinking and this probably made him an easy victim of unconsciousness owing to the intense heat that prevailed in the shaft by reason of exhaust steam. *See Report, page 8.* Inspection and inquiry made.
57	20th November, 8-30 A.M.	Bhutgoria Mine, Jharia P. O.	Aldih Coal Co., Ld.	Dhuk Lal Gope, (*m.*), 15, *Stone-remover.*	Coal	While descending a shaft alone in a cage he for some unknown reason fell out when about 20 feet from the bottom and fractured his skull. He died on the following day. Inspection and inquiry made.
			Falling into the shaft from the surface—(*1 death*).			
58	21st April, 10-30 P.M.	Anantapur Mine, Morriston P. O.	Anantapur Gold Field, Ld.	Woddar Gangadu, (*m.*), 30, *Coolie.*	Gold	He was employed as a lander at the top of a trial shaft. After emptying the bucket he stepped backwards and by some means fell to the bottom. He died a few hours later. Inspection and inquiry made.
			Falling from part of the way down—(*11 deaths*).			
59	5th June, 12-30 P.M.	South Jibutil Mine, Morriston P. O.	Nundydroog Co., Ld.	Karimbanakkal Rahman, (*m.*), 20, *Handjumper coolie.*	Gold	Slipped and fell on his head whilst climbing up a chain ladder from the bottom of a winze. He died about half an hour later. Inspection and inquiry made.
60	14th June, 10 P.M.	South Jibutil Mine, Morriston P. O.	Nundydroog Co., Ld.	Namathala Chinnavadu, (*m.*), 27, *Windlass coolie.*	Gold	He was working at a windlass by which water was being raised from a winze. Whilst sending the bucket away his foot slipped and he fell to the bottom of the winze—a distance of 38 feet. He sustained a fracture of the skull and died shortly after. Inspection and inquiry made.
61	27th June, 8 A.M.	Bhatdih Mine, Mohoda P. O.	Bengal Bhatdih Coal Co., Ld.	Chaman Gope, (*m.*), 24, *Stone-cutter.*	Coal	While sitting upon the top of a cage examining the shaft sides he lost his balance and fell 116 feet to the bottom, being killed instantly. Inspection and inquiry made.
62	3rd July, 2 P.M.	Surataur Sonalabad Mine, Jharia P. O.	Lachmi Narayan Agarwala.	Kanta Prosad Panday, (*m.*), 25, *Chaprassi.*	Coal	Fell from some unknown cause to the bottom of a pit whilst being lowered and was killed on the spot. Inspection and inquiry made.
63	5th July, 11-30 A.M.	Sodepur Mine, Dishargarh P. O.	Bengal Coal Co., Ld.	Mohabir Bhuia, (*m.*), 13, *Pump-khalassi.* Banamali Bauri, (*m.*), 20, *House servant.* Kirti Bauri, (*m.*), 25, *Haulage signalman.* Ananta Bauri, (*m.*), 25, *Onsetter.* Dhana Ghatwar, (*m.*), 26, *Surface banksman.*	Coal	A descending cage containing five men and an ascending cage containing one man collided with each other in the shaft. Four men from the former and the only occupant of the latter were thrown out and fell to the bottom of the shaft. *See Report, page 9.* Inspection and inquiry made.
64	12th September, 7 A.M.	Alkusa Mine, Kusunda P. O.	Raniganj Coal Association, Ld.	Dhakal Roy, (*m.*), 26, Kebal Meah, (*m.*), 20, *Sinkers.*	Coal	They were examining the sides of a shaft after firing, standing in a bucket, 53 feet from the surface. One of them must have accidentally struck out the locking pin of the bucket, which turned over, and they fell 55 feet to the bottom of the shaft. *See Report, page 10.* Inspection and inquiry made.

Fatal Accidents, 1909—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			IN SHAFTS—*concld.*			
			Things falling from the surface—*2 deaths.*)			
65	19th August, 8-30 P.M.	Industry Mine, Dhanbaid P. O.	Industry Coal Co., Ld.	Jagon Meah, (*m.*), 16, *Onsetter.*	Coal	While working at the bottom of a shaft an empty tub fell from the surface on him killing him instantly. *See Report, page 10.* Inspection and inquiry made.
66	11th November, 6-15 P.M.	Alkusa Mine, Kusunda P. O.	Raniganj Coal Association, Ld.	Hira Dhaikar, (*m.*), 22, *Hookman.*	Coal	A rail supporting a hook upon a frame on a sinking trolley was not fastened. As the sinking bucket was being raised it caught the rail and lifted it off the uprights. The rail then fell down the shaft and killed the hooker-on. *See Report, page 10.* Inspection and inquiry made.
			Things falling from part of the way down—(*2 deaths*).			
67	9th January, 7 P.M.	Hosur Mine, Hosur Mines P. O.	Hosur Gold Mines of Dharwar.	Sunjivi, (*m.*), 35, *Water-bailer.*	Gold	The key came out of the shaft of the reversing lever and the engine got out of control. The skip fell to the bottom and killed the deceased who was bailing water. Inspection and inquiry made.
68	1st May, 10-30 A.M.	Jairamdanga Mine, Asansol P.O.	New Beerbhum Coal Co., Ld.	Girish Singh, (*m.*), 22, *Sinker.*	Coal	A small piece of stone fell from the side of a shaft and struck him. He died the following day. Inspection and inquiry made.
			Miscellaneous—(*4 deaths*).			
69	8th March, 1-15 P.M.	Hosur Mine, Hosur Mines P. O.	Hosur Gold Mines of Dharwar, Ld.	Cowthell Bhima, (*m.*), 24, Lutcha Ram, (*m.*), 33, *Sinkers.*	Gold	They were struck by a skip which ran amain down the shaft. Inspection and inquiry made.
70	23rd March, Midnight.	Kabulgitti Mine, Kabulgitti P. O.	Dharwar Reefs Gold Mining Co., Ld.	Nabi Saib, (*m.*), 20, *Shaft-sinker.*	Gold	He was employed in the bottom of a shaft and climbed to a point about 25 feet above the bottom where he went to sleep on the timbers. The descending skip ran over his leg injuring him so severely that he died from the effects two days later. Inspection and inquiry made.
71	30th November, 2-30 P.M.	South Jibutil Mine, Morriston P. O.	Nundydroog Co., Ld.	Valu, (*m.*), 25, *Handjumper coolie.*	Gold	He was standing in a skip at a shaft bottom and helping his mates to load planks. Whilst doing so they shouted "Lift," the ringer at the 250 feet level, about 15 feet above, took this for a signal to ring away the skip. He gave the signal and the skip was raised. Valu was thus carried up and his head was jammed between the skip and the timbering at the level. He was killed on the spot. Inspection and inquiry made.

			BY EXPLOSIVES—(*5 deaths*).			
72	19th February, 6 A.M.	Hosur Mine, Hosur Mines P. O.	Hosur Gold Mines of Dharwar, Ld.	Donappa, (*m.*), 35, *Rock-loader.*	Gold	He was clearing rock from the bottom of a winze when he is stated to have been struck by a piece of rock which burst off with explosive force. It is not unlikely that the man was dressing the floor with a pick and detonated some explosive which had been left unexploded after the preceding round of holes were fired. Inspection and inquiry made.
73	20th February P.M.	Barkui Mine, Pench Valley P. O.	Pench Valley Coal Co., Ld.	Gazru Singh, (*m.*), 40, *Miner.*	Coal	He forcibly abstracted gunpowder cartridges from a bag carried by a shot firer's boy. These ignited by his lamp and exploded. He was so seriously burnt that he died a few days later. Inspection and inquiry made.
74	29th March, 11-30 P.M.	Chandamétta Mine, Pench Valley P. O.	Pench Valley Coal Co., Ld.	Mazar Ali Khan, (*m.*), 40, *Coal-cutter.*	Coal	He was sitting on the headways about 30 feet from the point where a bord was on the point of holing. A shot was fired in the bord and the flying coal struck him. He died a few hours later. Inspection and inquiry made.
75	20th June, 8 A.M.	Choitodih Mine, Katrasgarh P. O.	Lutchipur Coal Co., Ld.	Bhagu Singh, (*m.*), 25, *Pit-sinker.*	Coal	Whilst withdrawing a detonator from a missfired charge of dynamite, the shot exploded and killed him on the spot. Inspection and inquiry made.
76	6th July, 5-20 P.M.	Kabulgitti Mine, Kabulgitti P. O.	Dharwar Reefs Gold Mining Co., Ld.	Gopal Nayar, (*m.*), 22, *Blaster.*	Gold	He and a maistry were blasting. After lighting nine holes they signalled to be hoisted up and just as they were starting three of the holes exploded prematurely injuring them. Gopal died from the effects of the injuries received. Inspection and inquiry made.
			IRRUPTIONS OF WATER OR FALLING INTO WATER—(*3 deaths*).			
77	14th June, 11 A.M.	West Gopalichak Mine, Kusunda P. O.	Gopalichak Coal Co., Ld.	Jogeshwar Dhikar, (*m.*), 40, *Pump-khalassi.*	Coal	While attending to a pump in a pit bottom he lost his light, and although he had matches in his pocket he attempted to come away in the dark and stumbled headlong into the sump into which the pump exhausted. He was scalded so badly that he died within twenty-four hours. Inspection and inquiry made.
78	1st August, 9 P.M.	Dandot Mine, Dandot P. O.	North Western Railway	Star Mahomed, (*m.*), 18, *Coolie.*	Coal	While attempting to turn the cock of a syphon the deceased fell into the water and was drowned. Inspection and inquiry made.
79	27th October, 3-30 P.M.	Saltore Mine, Dishargarh P. O.	Saltore Coal Co., Ld.	Babu Lal Sheik, (*m.*), 29, *Pump-khalassi.*	Coal	Evidently fell into the sump when getting into the bucket to come up the pit.
			HAULAGE—(*16 deaths*).			
80	21st January, 5-30 P.M.	Takrai Mine, Khost Colliery, Khost P. O.	North Western Railway	Jangira Mal, (*m.*), 25, *Contractor's munshi.*	Coal	At a sudden change in the grade of the haulage dip the victim, a contractor's official, who was seated on the coupling chains of the tub next to the rope, was unseated and fell headlong to the bottom of the dip. Death was instantaneous. Inspection and inquiry made.
81	17th February, 2 A.M.	Borrea Mine, Sitarampur P. O.	New Beerbhum Coal Co., Ld.	Kalyan Majhi, (*m.*), 20, *Miner.*	Coal	Deceased was twisting a loaded tub on a flat sheet at the bottom of a steep road when another tub, whose sprag had broken, dashed into it and caught his leg between the buffers. He died the same day from the effects of the injury. Inspection and inquiry made.
82	26th February, 9 A.M.	Sanctoria Mine, Dishargarh P. O.	Bengal Coal Co., Ld.	Sambhu Koira, (*m.*), 22, *Miner.*	Coal	A set of empties was descending an incline when it met a displaced friction pulley frame which released the leading tub and it ran amain dashing into the deceased and injuring him. He died from the effects five days later. Inspection and inquiry made.

Fatal Accidents, 1909—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			HAULAGE—*concld.*			
83	26th February, 10 A.M.	Central Kurkend Mine, Kusunda P. O.	Central Kurkend Coal Co., Ld.	Maharo Turi, (*m.*), 35, *Timber coolie.*	Coal	As eight tubs were being drawn up an incline, the coupling between the first and second tubs broke and seven tubs ran wild, injuring the deceased, through the effects of which he died on the 5th March. Inspection and inquiry made.
84	12th March, 11-30 A.M.	Bhulanbarari Mine, Jharia P. O.	Bhulanbarari Coal Co., Ld.	Shibd oyal Singh, (*m.*), 35, *Contractor's overseer.*	Coal	While waiting for empty tubs being shunted, a train of twenty-four tubs became detached from the rope and ran into him, killing him instantly. Inspection and inquiry made.
85	17th March, 9-30 P.M.	Ganzlatan Mine, Katrasgarh P. O.	New Manbhum Coal Co., Ld.	Bison Gope, (*m.*), 45, *Hookman.*	Coal	As a journey of five empty tubs was being lowered, the coupling broke and two tubs ran wild over deceased, injuring him so seriously that he died next day. Inspection and inquiry made.
86	19th March, 7-30 A.M.	Dheriajoba Mine, Kusunda P. O.	Jharia Coal Syndicate, Ld.	Sovan Kahar, (*m.*), 25, *Hookman.*	Coal	While a set of empty tubs was being lowered, Sovan attempted to get on one of the tubs and was knocked down. He was injured so seriously that he died a few days later.
87	8th June, 6-30 A.M.	Garbham Mine, Chipurupalli P. O.	Vizianagram Mining Co., Ld.	Woopada Poli, (*f.*), 40, *Coolie.*	Manganese	Owing to a lump of ore falling from a wagon of a set on to the rails of a self-acting incline, and tilting another wagon which ran over it, a coupling became detached. Two loaded wagons ran amain, struck the deceased and caused a fracture of the spine from the effects of which she died half an hour later. Inspection and inquiry made.
88	12th June, 5 A.M.	Bhutgoria Mine, Jharia P. O.	Aldih Coal Co., Ld.	Behari Passi, (*m.*), 45, *Trolleyman.*	Coal	He had fallen asleep and hearing the full train coming up attempted to remove the stop block which is fixed across the whole width of the entrance drift. He was caught by the train and dragged some distance, being so severely mauled that he died the next day. Inspection and inquiry made.
89	25th June, 8 P.M.	Bhuggutdih Mine, Dhanbaid P. O.	Bengal Nagpur Coal Co., Ld.	Lakha Mahato, (*m.*), 15, *Bailing coolie.*	Coal	He was heard to scream by the bottom hookman, and on going up the latter found him lying injured on the haulage road. He was probably attempting to ride up on the journey. He sustained a fractured thigh and died next day from shock. Inspection and inquiry made.
90	21st July, 10-20 A.M.	Bhulanbarari Mine, Jharia P. O.	Bhulanbarari Coal Co., Ld.	Jhari Burhi, (*m.*), 40, *Propping carpenter.*	Coal	Three tubs of a journey were pushed over the brow of an incline without being connected to the remainder. They ran wild and killed deceased who was repairing the wire of a lower safety gate underground. Inspection and inquiry made.
91	1st August, 9-30 A.M.	Khost Mine, Khost P. O.	North-Western Railway	Amar Nath, (*m.*), 31, *Mistri.*	Coal	While riding on the chains coupling the rope to a set, in a haulage road, the leading tub became derailed and he fell into the side of the road-way and was nipped between the tub and a prop. He died on the 5th January 1910, from the effects of the injuries received. Inspection and inquiry made

92	27th August, 12-30 P.M.	Vanora Khas Mine, Charanpur P. O.	Maharaja M. C. Nandi	Fucha Turi, (*m.*), 35, Mohor Mahato, (*m.*), 45, *Water-bailers.*	Coal	Owing to the opening of a hook six tubs ran amain and killed the deceased who were bailing water below the buffer stop. *See Report, page 11.* Inspection and inquiry made.
93	19th October, 8-30 A.M.	Tikak Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Ghunia, (*m.*), 32, *Rope-rider.*	Coal	He was coming out with a journey of full tubs, riding on a four yard chain which connected two sections of the journey together. Somehow he slipped off and the back section ran over him, causing such injuries that he died shortly after. Inspection and inquiry made.
94	30th December, 4 P.M.	Phularitand Mine, Katrasgarh P. O.	Phularitand Coal Co., Ld.	Chandia, (*f.*), 13, *Miner's carrier.*	Coal	A full tub which was being shunted on the surface, jumped the switches, broke the safety gate and ran amain down the incline. It caught Chandia and a man as they were coming outbye and injured the girl so severely that she died in twelve hours. Inspection and inquiry made.
			SUNDRIES UNDERGROUND—(*10 deaths*).			
95	12th February, 9-30 P.M.	Central Kurkend Mine, Kusunda P. O.	Central Kurkend Coal Co., Ld.	Himia Turin, (*f.*), 18, *Coal-carrier.*	Coal	She was crushed while loading tubs and killed instantly. Inspection and inquiry made.
96	14th February, 12-15 P.M.	Bhulanbarari Mine, Jharia P. O.	Bhulanbarari Coal Co., Ld.	Etwari Beldar, (*m.*), 30, *Hook-man.*	Coal	As he and another man were bringing a loaded tub down a gradient of ½" to 3" in the yard the tub fouled the facing points of a pass bye, and reared up throwing him to the side and breaking his neck. Inspection and inquiry made.
97	15th February, 9-30 A.M.	Zardalu Mine, Khost Colliery, Khost P. O.	North-Western Railway	Hayat, (*m.*), 25, *Miner.*	Coal	In crossing over the top of a stenton it is surmised his foot became wedged between some timbers, and in trying to extricate it he lost his balance and fell down and broke his neck. Inspection and inquiry made.
98	29th April, 2 A.M.	Lodna Mine, Jharia P. O.	Lodna Colliery Co., Ld.	Koili Bhuia, (*f.*), 14, *Slack-carrier.*	Coal	A full journey of seven tubs was being brought along a level. Her clothes got caught in one of the wheels and she was dragged about 24 feet. She died the same day from shock. Inspection and inquiry made.
99	14th June, 8 P.M.	Upper Ledo Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Bohora Kestin, (*f.*), 22, *Tub-pusher.*	Coal	While pushing tubs she got her head crushed between two tubs.
100	23rd June, 5-30 A.M.	Bagdiggi Mine, Jharia P. O.	C. J. Smith . .	Sahu Rajwarin, (*f.*), 45, *Dust kamin.*	Coal	Run over by an empty tub while sitting at the end of a gallery off the haulage road. Inspection and inquiry made.
101	30th July, 1-30 P.M.	Kendwadih Mine, Kusunda P. O.	East Indian Coal Co., Ld.	Behari Rajwar, (*m.*), 32, *Miner.*	Coal	While standing upon an over-turned basket, pulling down a piece of coal and stone, he slipped and fell as it came away. He was injured so seriously that he died a fortnight later. Inspection and inquiry made.
102	6th October, 8-30 A.M.	Nimcha Mine, Searsol P. O.	Baraboni Coal Concern, Ld.	Naranga Majhain, (*f.*), 60, *Dust kamin.*	Coal	Whilst she sat smoking on a turnplate a loaded tub which was being pushed struck and killed her. Inspection and inquiry made.
103	21st November, Midnight.	Dishargarh Mine, Dishargarh P. O.	Equitable Coal Co., Ld.	Raboni Majhain, (*f.*), 12, *Coal-carrier.*	Coal	Owing to a bad joint in some underground rails a loaded tub was derailed and turning over upon its side threw its contents over the victim who sustained slight injuries about her head. High fever set in and she died four days later. Inspection and inquiry made.
104	23rd November, 12 Noon.	Sijua Mine, Sijua P. O.	Sijua Coal Co., Ld. .	Jadhna Burhi, (*m.*), 24, *Propping coolie.*	Coal	A propping mistri had been drawing a prop. Deceased was with him. The top coal showed signs of coming down, and the mistri shouted to him to get back. In doing so he fell and cut himself between the legs on a sharp stone, and died half an hour later from collapse caused by excessive bleeding. Inspection and inquiry made.

Fatal Accidents, 1909—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			ABOVE GROUND—(*25 deaths*).			
			By Surface Machinery—(*3 deaths*).			
105	15th January 2 A.M.	Dheriajoba Mine, Kusunda P. O.	Jharia Coal Syndicate, Ld.	Dharu Singh, (*m.*), 25, *Engine Assistant.*	Coal .	He attempted to cross over a connecting rod whilst it was in motion, and a long cloth he had on got caught in the pinion, and he got jammed between two cog wheels. He died twenty-four hours later. Inspection and inquiry made.
106	8th April, 6 A.M.	Aikusa Mine, Kusunda P. O.	Raniganj Coal Association, Ld.	Ram Lal Dosadh, (*m.*), 13, *Shale picker.*	Coal .	He crossed a fence to clean up a platform and was caught by his clothes in a belt wheel and sustained such serious injuries that he died the same night. Inspection and inquiry made.
107	6th June, 12 Noon.	Hosur Mine, Hosur Mines P. O.	Hosur Gold Mines, Ld.	Durga, (*m.*), 12, *Engine cleaner.*	Gold .	He started a drilling machine out of mischief and his coat got caught by the revolving drill holder. He died two days later. Inspection and inquiry made.
			On surface railways and tramways belonging to the mine—(*6 deaths.*)			
108	15th January, 5-15 P.M.	Tirori Mine, Kamptee P. O.	D. Laxminarain . .	Sukia, (*m.*), 13, *Coolie.*	Manganese	He rode on a waste tram and failing to check its speed, fell with the tram over the end of the dump. His neck broke and he died on the spot. Inspection and inquiry made.
109	21st January, 10 A.M.	Kurkend Mine, Kusunda P. O.	Sudamdih Coal Co., Ld.	Komol Nunia, (*m.*), 45, *Loading coolie.*	Coal .	He was crushed while attempting to cross between two uncoupled wagons when shunting was in progress. Inspection and inquiry made.
110	10th June, 11 A.M.	Kurhurbari Mine, Giridih P. O.	East Indian Railway Co.	Ramjani Meah, (*m.*), 20, *Loco. Guard.*	Coal .	He slipped while coupling two wagons and his head got caught between the centre buffer of one wagon and the coupling hook of the other. He sustained a fracture of the skull and died fourteen hours later. Inspection and inquiry made.
111	27th July, 2-30 A.M.	Sitalpur Mine, Sitarampur P. O.	Bengal Coal Co., Ld. .	Lakhu Bauri, (*m.*), 21, *Wagon trimmer.*	Coal .	In some unaccountable way the deceased was knocked down by a wagon that was being lowered under the tippler shoot. He expired a few minutes after the accident. Inspection and inquiry made.
112	21st September, 8 A.M.	Ganzlatan Mine, Katrasgarh P. O.	New Manbhum Coal Co., Ld.	Lochon Roy's wife, (*f.*), 14, *Coal-carrier.*	Coal .	She was crossing a siding when an engine was coming with a covered wagon in front, and was run over. It was raining heavily at the time. Inspection and inquiry made.
113	11th October, 10 P.M.	Baraboni Mine, Asansol P. O.	Bilbera Coal Co., Ld. .	Fucha Turi, (*m.*), 22, *Fireman.*	Coal .	Whilst he was crossing a tram line he was run over by a loaded tub which ran wild. He died two days later. *See Report, page 12.* Inspection and inquiry made.

Miscellaneous on surface (*16 deaths*).

114	22nd March, 9 P.M.	Sibpur Mine, Charanpur P. O.	Katras-Jharia Coal Co., Ld.	Harrin Turi, (*m.*), 22, *Banksman.*	Coal	He was pouring kerosine oil from a tin into a lighted torch lamp when the oil ignited and an explosion occurred. He was so seriously burnt that he died two hours later. Inspection and inquiry made.
115	25th March, 3-30 P.M.	Sanctoria Mine, Dishargarh P. O.	Bengal Coal Co., Ld.	Prosanna Baurini, (*f.*), 58, Rahim Meah, (*m.*), 12, Kanai Passi, (*m.*), 16, *Earth cutters.*	Coal	Five persons were engaged cutting a trench 38′ × 8′ × 9′ 6″ in "made" ground to expose a brickwork foundation preparatory to dismantling it when the side collapsed. Three were killed and two seriously injured. *See Report, page 12.* Inspection and inquiry made.
116	1st April, 10-30 A.M.	Kabulgitti Mine, Kabulgitti P. O.	Dharwar Reefs Gold Mining Co., Ld.	Kullawa, (*f.*), 11, *Coolie.*	Gold	She fell into a slime pit where she went to fetch water for mixing mortar. Inspection and inquiry made.
117	1st April, 4-15 P.M.	Kandri Mine, Kamptee P. O.	Central Provinces Prospecting Syndicate, Ld.	Chottu, (*m.*), 60, *Coolie.*	Manganese	A coolie had bared a piece of ore from its bed when it fell over the edge of the face on to the deceased's head fracturing it. Inspection and inquiry made.
118	3rd April, 2-30 P.M.	Loyabad Mine, Bansjora P. O.	Barakar Coal Co., Ld.	Thami Meah, (*m.*), 28, *Miner.*	Coal	He and his younger brother aged 16 had been washing in an old quarry full of water, when the latter fell in. Deceased and another man went to the rescue. The other man pulled the boy out, but Thami was drowned. Inspection and inquiry made.
119	30th May, 12 Noon.	Kodur Mine, Chipurupalli P. O.	Vizianagram Mining Co., Ld.	Sandaka Madamma, (*f.*), 48, *Coolie.*	Manganese	She was standing in a sloping pathway leading into the quarry, when she fell over the edge, a distance of about 15 feet. She died within a few minutes of the fall. Inspection and inquiry made.
120	6th June, 4 P.M.	Nagooni Mine, Kanyara P. O.	Kangara Valley Slate Co., Ld.	Sown Mull Mahanjan, (*m.*), 55, *Contractor.*	Slate	He was working near the foot of a hill when he saw a large stone rolling towards him. In his effort to escape his foot slipped and the stone caught him in the back. He died 15 minutes later. Inspection and inquiry made.
121	24th June, 1 P.M.	Nagooni Mine, Kanyara P. O.	Kangra Valley Slate Co., Ld.	Gannu Rathi, (*m.*), 26, *Coolie.*	Slate	A large boulder became detached from the crest of a hill by a heavy fall of rain and rolling down the slope of the hill struck the deceased, who had been warned of its approach by his mate, full in the face. Inspection and inquiry made.
122	24th September, 5-30 P.M.	Sudreadih Mine, Nowagarh P. O.	Sudreadih Coal Co., Ld.	Bigu Singh, (*m.*), 55, *Surface coolie.*	Coal	He had been employed in moving a pump on the bank of the entrance to an old incline, which had fifteen feet of water in it at the deepest end. While his companions were resting he went back to the incline possibly to get some water and fell in and was drowned. Inspection and inquiry made.
123	9th October, 12 Noon.	Shwebontha Mine, Mogok P. O.	Burma Ruby Mines, Ld.	Kaw Sang, (*m.*), 35, *Coolie.*	Ruby	Fell down a bank and an iron sleeper cut deep into his thigh, severing several important blood vessels. He died at 11 P.M. the same day.
124	6th November, 5 A.M.	Serampur Mine, Giridih P. O.	East Indian Railway Co.	Hurru Dosadh, (*m.*), 21, *Coal-cutter.* Mitan Meah, (*m.*), 13, *Coal-carrier.*	Coal	Accidentally burnt to death whilst sleeping in a railway wagon. Inspection and inquiry made.
125	16th November, 5-20 P.M.	Red Hill Mine, Mogok P. O.	Burma Ruby Mines, Ld.	Lou Lit, (*m.*), 40, *Coolie.*	Ruby	Killed by an electric shock received by catching hold of a leaking stay wire out of curiosity.
126	5th December, ?	Sukli Mine, Kamptee P. O.	Central India Mining Co., Ld.	Nerbuddia, (*f.*), 35, *Ore-carrier.*	Manganese	She was found drowned. Inspection and inquiry made.

Fatal Accidents, 1909—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Reason for exclusion.	Cause of accident and remarks.
			DEATHS NOT INCLUDED IN THE STATISTICS—(*29 deaths.*)				
1	28th February, 10 P.M.	Angarpatra Mine, Katrasgarh P. O.	Angarpatra Coal Co., Ld.	Baran Gope, (*m.*), 14, *Dust coolie.*	Coal	Not a mine accident.	He with others were sleeping on straw in a hut when it caught fire, and he got burnt so severely that he died from the effects the following day. Inspection and inquiry made.
2	4th March, 10 A.M.	Sibpur Mine, Charanpur P. O.	Katras-Jharia Coal Co., Ld.	Sakio Majhain, (*f.*), 9.	Coal	Not employed.	Whilst drawing water from an abandoned and waterlogged quarry she fell in and was drowned. Inspection and inquiry made.
3	14th March, 9-15 A.M.	Panchgatchia Mine, Sitarampur P. O.	Lutchipur Coal Co., Ld.	Khuki Baurini, (*f.*), 2½.	Coal	Not employed.	The khalassi riding on the front wagon of a set of empties during shunting operations noticed three children playing on the line. He seized two of them but failed to reach the third who was knocked down and killed. *See Report, page 13.* Inspection and inquiry made.
4	10th May, 10 A.M.	Loyabad Mine, Bansjora P. O.	Barakar Coal Co., Ld.	Jitoon, (*f.*), 3.	Coal	Not employed.	The child was missed by its mother who was working close by a boiler tank, and on a search being made the body was found inside the tank. Inspection and inquiry made.
5	12th May, 5 P.M.	Katras Mine, Katrasgarh P. O.	Nowagarh Coal Co., Ld.	Tukna Kumar, (*m.*), 5.	Coal	Not employed.	Drowned whilst playing in a surface washing tank, the mother was washing clothes at the tank at the time. Inspection and inquiry made.
6	19th May, 3-30 P.M.	Kapasara Mine, Barakar P. O.	Bengal Oriental Coal Co.	Ajodhya Gorain, (*m.*), 35. *Miner.*	Coal	Not a mine accident.	He was struck by lightning as he was preparing to enter an incline. He died from shock three hours later. Inspection and inquiry made.
7	23rd May, 10 A.M.	Loyabad Mine, Bansjora P. O.	Barakar Coal Co., Ld.	Idan Meah, (*f.*), 6.	Coal	Not employed.	She was sitting on the bank of an old quarry full of water, inside the fence, and slipped into the water. A boy of 7 years was the only person with her at the time. Inspection and inquiry made.
8	26th May, 1 P.M.	Sitapar Mine, Ramakona P. O.	Indian Manganese Co., Ld.	Kishni, (*f.*), 7.	Manganese	Not employed.	A rafter in a godown broke and let fall a number of corrugated iron sheets on the child which killed her outright.
9	4th June, ?	Raniganj Mine, Raniganj P. O.	Bengal Coal Co., Ld.	? (*m.*), 30.	Coal	Not employed.	He was found drowned in an old well. Inspection and inquiry made.
10	11th June, 6-30 P.M.	Bhulanbarari Mine, Jharia P. O.	Bhulanbarari Coal Co., Ld.	Hiria, (*f.*), 10.	Coal	Not employed.	She went to a well to draw water and fell over the wall guarding it and was drowned. Inspection and inquiry made.
11	14th June, 6 P.M.	Charanpur Mine, Charanpur P. O.	Reliance Coal Co., Ld.	Ladhu Moira, (*m.*), 7	Coal	Not employed.	Run over by a train of tubs whilst playing on the line. Inspection and inquiry made.
12	12th July, 1 P.M.	Gobindpur Mine, Katrasgarh P. O.	Gobindpur Coal Co., Ld.	Gope, (*m.*), 12.	Coal	Not employed.	While attempting to fill a brass vessel with water he slipped and fell into the tank and was drowned. Inspection and inquiry made.

13	19th August, 6 P.M.	Baraboni Mine, Asansol P. O.	Baraboni Coal Concern, Ld.	Chunki, (*f.*), 3.	Coal .	Not employed.	She fell into a boiler tank unnoticed and was drowned. Inspection and inquiry made.
14	27th August, 3-15 P.M.	Steam tramway on the Tumsur-Katangi Road.	Central India Mining Co., Ld.	Adku Kumbi, (*m.*), 65, *Herdman.*	Manganese	Not employed on the mine.	He was tending cattle and in trying to cross the lines was knocked over by the engine and killed. Inspection and inquiry made.
15	6th September, 8 P.M.	Bhalgora Mine, Jharia P. O.	Bhalgora Coal Co., Ld.	Shib Dohin, (*m.*), 32.	Coal .	Not employed.	He was run over while attempting to cross the tramway and was so severely injured that he died on the 10th September. Inspection and inquiry made.
16	25th September, 3-30 P.M.	Baraboni Mine, Charanpur P. O.	New Beerbhum Coal Co., Ld.	Passu Kole, (*f.*), 1½	Coal .	Not employed.	The child was near the line when a tub grazed against her leg. She died of shock the next day. Inspection and inquiry made.
17	29th September, ?	Kusunda Mine, Kusunda P. O.	Patel & Co. . .	? (*m.*), 35.	Coal .	Not employed.	He appears to have been a beggar. He was found drowned. Inspection and inquiry made.
18	15th October, ?	Abandoned quarry	Equitable Coal Co., Ld.	Bhupati Bhusan Mookerji, (*m.*), ? Kumda Harini, (*f.*), ? Bauri Harini (*f.*), ? Kalpa Harini, (*f.*),? Fulkumari Keotini, (*f.*), ?	Coal	Not employed.	Killed by a fall of overburden whilst getting sandstone. Inspection and inquiry made.
19	17th October, 5 P.M.	North Kustore Mine, Kusunda P. O.	Raniganj Coal Association, Ld.	Muckta Kamari, (*f.*), 50.	Coal .	Not employed.	She was digging white earth at the side of the entrance to an old incline when overhanging material slipped down and buried and killed her. Inspection and inquiry made.
20	23rd November, 3 P.M.	Angarpatra Mine, Katrasgarh P. O.	Angarpatra Coal Co., Ld.	Dugaya Passin, (*f.*), 25.	Coal .	Not employed.	Accidentally fell down No. 2 pit which is used as a well, whilst drawing water and was drowned. Inspection and inquiry made.
21	29th November, 3-30 P.M.	Bamundiha Mine, Sitarampur P. O.	Damuda Coal Co., Ld. .	Bhaglu Dome, (*m.*), 35, *Propping coolie.*	Coal	Cause of accident unknown.	His body was found in a high state of decomposition carefully covered over with stones on the site of an old fall of roof on the date given. Inspection and inquiry made.
22	2nd December, 3-30 P.M.	Jamuria Mine, Nandi P. O.	Equitable Coal Co., Ld.	Gokul Adikeri, (*m.*), 14.	Coal .	Not employed.	He opened the shaft gates at the surface level and jumped down the shaft a depth of 186 feet. He was killed on the spot. Inspection and inquiry made.
23	8th December, 10 P.M.	Jakarkote Mine, Katha P. O.	Bhagwan Das Ram Das.	Raja, (*m.*), 16, Sultan, (*m.*), 50.	Coal .	Not employed.	Killed by a sudden collapse of roof.
24	25th December, 5-30 P.M.	Jamuria Mine, Nandi P. O.	Equitable Coal Co., Ld.	Batua Rai Bhuia, (*m.*), 8.	Coal	Not employed.	He was sitting on the line near his mother who was filling a tub on a slight incline. The tub ran down the slope and over him, killing him on the spot. Inspection and inquiry made.

APPENDIX II.

Table No. 1.

Indian Mines Act, 1901, Numbers of Mines and Workers, year 1909.

Province.	District and Mineral field.	Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Average number of persons employed daily in and about the mines.								Grand Total below ground and above ground.
							Below ground.				Above ground.				
			Worked by steam.	Not worked by steam.	Once.	Twice or more.	Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
A.—COAL.															
Bengal	Hazaribagh { Bokaro Ramgarh	4	...	4	3	...	53	54	5	112	28	22	3	53	165
	Hazaribagh { Giridih	11	7	4	4	3	3,170	1,179	29	4,378	1,780	902	78	2,760	7,138
	Manbhum { Jharia	216	70	146	57	33	18,775	14,410	395	33,580	12,676	6,106	1,145	19,927	53,507
	Manbhum { Raniganj	62	9	53	33	6	2,671	1,071	7	3,749	1,079	616	48	1,743	5,492
	Bankura ,,	1	...	1	1	...	26	20	...	46	1	2	...	3	49
	Burdwan, ,,	164	112	52	104	54	15,511	6,831	183	22,525	7,663	4,180	242	12,085	34,610
	Sonthal Parganas, Raniganj.	2	...	2	...	...	17	6	...	23	4	2	...	6	29
	Sonthal Parganas, Rajmahal.	1	...	1	...	...	18	22	3	43	4	5	...	9	52
	Palamau, Daltonganj	2	2	...	2	...	290	170	41	501	205	74	29	308	809
	Birbhum, Raniganj	1	...	1	...	1	10	8	...	18	8	2	...	10	28
	Sambalpur, Hingir-Rampur.	1	...	1	...	...	249	125	...	374	...	...	...	...	374
	TOTAL	465	200	265	204	97	40,790	23,896	663	65,349	23,448	11,911	1,545	36,904	102,253
Central Provinces.	Chhindwara, Pench Valley.	5	5	...	5	...	344	206	15	565	254	106	12	372	937
	Narsinghpur, Mohpani	1	1	...	...	1	526	258	...	787	383	54	...	437	1,224
	Chanda, Ballarpur	1	1	...	...	1	576	...	...	576	174	...	...	174	750
	TOTAL	7	7	...	5	2	1,449	464	15	1,928	811	160	12	983	2,911
Panjab	Jhelum	11	...	11	9	2	645	...	7	652	499	...	11	510	1,162
	Shahpur	4	...	4	...	...	49	...	...	49	5	...	...	5	54
	Mianwali	1	...	1	1	...	7	...	...	7	...	...	...	...	7
	TOTAL	16	...	16	10	2	701	...	7	708	504	...	11	515	1,223
Eastern Bengal and Assam.	Lakhimpur	7	6	1	1	4	820	300	...	1,120	406	240	29	675	1,795
Baluchistan	Sibi, Khost	1	1	...	...	1	524	...	...	524	237	...	29	266	790
	Quetta, Sor Range	7	...	7	7	...	108	...	...	108	26	...	...	26	134
	Kalat, Mach and Digari	6	...	6	2	...	148	...	...	148	26	...	...	26	174
	Loralai, Loralai	1	...	1	..	...	5	...	...	5	2	...	...	2	7
	TOTAL	15	1	14	9	1	785	...	...	785	291	...	29	320	1,105
N.-W. Frontier Province.	Hazara	1	...	1	...	...	4	...	...	4	...	...	...	...	4
	GRAND TOTAL (COAL).	511	214	297	229	106	44,549	24,630	685	69,894	25,460	12,311	1,626	39,397	109,291
B.—MICA.															
Bengal	Manbhum	1	...	1	...	...	5	6	...	11	4	3	1	8	19
	Monghyr	2	...	2	..	...	56	102	...	158	126	149	...	275	433
	Hazaribagh	83	...	83	30	...	2,115	878	105	3,098	686	814	753	2,253	5,351
	Gaya	15	...	15	...	...	473	307	80	860	95	68	52	215	1,075
	TOTAL	101	...	101	30	...	2,649	1,293	185	4,127	911	1,034	806	2,751	6,878
Madras	Nellore	68	...	68	51	...	1,055	821	87	1,963	321	329	291	941	2,904
Rajputana	Ajmer-Merwara	3	...	3	3	...	19	...	...	19	42	18	4	64	83
	GRAND TOTAL (MICA).	172	...	172	84	...	3,723	2,114	272	6,109	1,274	1,381	1,101	3,756	9,865

APPENDIX II—*contd.*

Table No. 1—*contd.*

Indian Mines Act, 1901, Numbers of Mines and Workers, year 1909.

Province.	District and Mineral field.	Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Average number of persons employed daily in and about the mines.								Grand Total below ground and above ground.
							Below ground.				Above ground.				
			Worked by steam.	Not worked by steam.	Once.	Twice or more.	Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
							C.—MANGANESE.								
Central Provinces.	Nagpur	12	...	12	1	2	1,237	844	...	2,081	308	191	10	509	2,590
	Bhandara	3	...	3	2	...	446	280	...	726	116	59	...	175	901
	Balaghat	6	...	6	4	...	1,179	583	55	1,817	273	88	24	385	2,202
	Chhindwara	3	1	2	...	...	247	206	...	453	14	54	...	68	521
	TOTAL	24	1	23	7	2	3,109	1,913	55	5,077	711	392	34	1,137	6,214
Madras	Vizagapatam	11	...	11	1	...	1,693	888	10	2,591	774	485	80	1,339	3,930
Bombay	Panch Mahals	2	...	2	...	...	210	90	18	318	220	87	26	333	651
	GRAND TOTAL (MANGANESE)	**37**	**1**	**36**	**8**	**2**	**5,012**	**2,891**	**83**	**7,986**	**1,705**	**964**	**140**	**2,809**	**10,795**
							D.—LIMESTONE.								
Central Provinces.	Jabalpur, Katni	20	...	20	7	10	1,035	1,413	64	2,512	560	562	75	1,197	3,709
Panjab	Hoshiarpur	1	...	1	...	...	40	...	...	40	50	...	...	50	90
	GRAND TOTAL (LIMESTONE).	**21**	...	**21**	**7**	**10**	**1,075**	**1,413**	**64**	**2,552**	**610**	**562**	**75**	**1,247**	**3,799**
							E.—SALT.								
Panjab	Shahpur	1	...	1	...	...	28	26	3	57	...	...	...	...	57
	Jhelum	2	...	2	...	1	436	406	61	903	41	...	...	41	944
	Mianwali	1	...	1	1	...	60	...	...	60	..	...	...	..	60
	GRAND TOTAL (SALT).	**4**	...	**4**	**1**	**1**	**524**	**432**	**64**	**1,020**	**41**	...	...	**41**	**1,061**
							F.—GEMS.								
Burma	Mogok (Rubies, etc.)	1	1	...	...	...	652	...	...	652	733	...	...	733	1,385
							G.—SLATE.								
Bengal	Monghyr	6	...	6	6	...	136	73	...	209	61	5	..	66	275
Punjab	Kangra	2	...	2	2	...	80	...		80	120	25	35	180	260
	Gurgaon	3	...	3	3	...	47	...	30	77	97	...	13	110	187
	TOTAL	5	...	5	5	...	127	...	30	157	217	25	48	290	447
	GRAND TOTAL (SLATE.)	**11**	...	**11**	**11**	...	**263**	**73**	**30**	**366**	**278**	**30**	**48**	**356**	**722**
							H.—GOLD.								
Bombay	Dharwar	5	5	...	4	1	1,123	...	1	1,124	502	65	59	626	1,750
Madras	Anantapur	3	3	...	3	...	331	...	...	331	209	40	19	268	599
	GRAND TOTAL (GOLD).	**8**	**8**	...	**7**	**1**	**1,454**	...	**1**	**1,455**	**711**	**105**	**78**	**894**	**2,349**

APPENDIX II—*contd.*

Table No. 1—*concld.*

Indian Mines Act, 1901, Number of Mines and Workers, year 1909.

PROVINCE.	District and Mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINE.		NUMBER OF MINES INSPECTED DURING THE YEAR		AVERAGE NUMBER OF PERSONS EMPLOYED DAILY IN AND ABOUT THE MINES.								
							BELOW GROUND.				ABOVE GROUND.				Grand Total below ground and above ground.
			Worked by steam.	Not worked by steam.	Once.	Twice or more.	Adult males.	Adult females.	Children (under 12)	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
							I.—IRON.								
Bengal	Singhbhum	5	...	5	...	...	...	...	...	...	190	363	...	553	553
							J.—WOLFRAMITE.								
Central Provinces.	Nagpur	1	...	1	...	...	40	8	...	48	30	7	...	37	85
Burma	Mergui	1	...	1	...	...	...	...	...	...	...	...	...	...	...*
	GRAND TOTAL (Wolframite).	2	...	2	...	...	40	8	...	48	30	7	...	37	85
							K.—MAGNESITE.								
Madras	Salem	1	..	1	...	...	23	19	26	68	26	20	35	81	149
							L.—CHROMITE.								
Baluchistan	Quetta-Pishin	2	...	2	...	...	6	...	...	6	10	...	...	10	16
							M.—COPPER.								
Bengal	Singhbhum	2	2	...	1	...	180	...	...	180	113	52	10	175	355
							N.—FULLER'S EARTH.								
Central Provinces.	Jabalpur	1	...	1	1	...	...*	...	...	...	...	...	...	...	... †
							O.—CLAY.								
Central Provinces.	Jabalpur	1	...	1	1	...	16	36	...	52	24	8	...	32	84
							P.—GALENA.								
Burma	Mandalay	1	...	1	...	...	4	...	...	4	4	...	...	4	8
							Q.—TIN.								
Burma	Maliwun	1	...	1	...	...	47	...	...	47	40	...	...	40	87
							R.—STEATITE.								
Central Provinces.	Jabalpur	3	...	3	...	...	25	15	...	40	28	18	...	46	86
							S.—BAUXITE.								
Central Provinces.	Jabalpur	1	...	1	...	...	11	5	...	16	4	...	...	4	20
	GRAND TOTAL (ALL MINERALS).	785	226	559	350	120	57,604	31,666	1,225	90,495	31,281	15,821	3,113	50,215	140,710

* Figures included along with that of Tin.
† Figures included along with that of Limestone.

APPENDIX II—*contd.*

Table No. 2.

Classified Statement of Fatal and Serious Accidents in and about Mines regulated by the Indian Mines Act, 1901, during the year 1909.

Province.	District and Mineral field.	Total average number of persons employed daily.	Total output.	Number of separate fatal accidents.	Number of deaths. Below ground.	Number of deaths. Above ground.	Number of deaths. Total deaths.	Number of serious non-fatal accidents.	Number of persons seriously injured. Below ground.	Number of persons seriously injured. Above ground.	Number of persons seriously injured. Total number of persons injured.	Death-rate per 1,000 persons employed. Below ground.	Death-rate per 1,000 persons employed. Above ground.	Death-rate per 1,000 persons employed. Below ground and above ground.
			A.—COAL.											
			Tons.											
Bengal	Hazaribagh { Bokaro-Ramgarh	99	4,326	...	...	...	...	...	...	...	..	...	...	...
	Hazaribagh { Giridih	7,204	702,811	5	6	3	9	16	14	2	16	1·35	1·07	1·24
	Manbhum, Jharia	53,507	5,832 672	46	42	6	48	43	28	15	43	1·25	·30	·89
	„ Raniganj	5,492	506,195	1	1	...	1	2	2	...	2	·25	...	·18
	Bankura, „	49	4,630	...	...	...	...	...	...	...	...	...	...	...
	Burdwan, „	34,610	3,520,361	29	36	6	42	40	36	10	46	1·59	·49	1·21
	Sonthal Parganas, Raniganj	29	2,379	...	...	...	...	...	...	..	...	...	...	...
	„ Rajmahal	52	1,900	...	...	...	...	...	...	...	..	...	...	...
	Palamau, Daltonganj	809	84,290	...	...	...	...	...	...	...	...	...	...	...
	Birbhum, Raniganj	28	1,247	...	..	...	...	...	...	...	...	...	...	...
	Sambalpur, Hingir-Rampur	374	..	...	...	...		...	...	..	...	...	...	...
	TOTAL	102,253	10,660,811	81	85	15	100	101	80	27	107	1·30	·40	·97
Central Provinces	Chhindwara, Pench Valley	937	92,196	2	2	...	2	10	11	..	11	3·53	...	2·13
	Narsinghpur, Mohpani	1,224	60,667	...	...	..	...	2	2	...	2	...	...	...
	Chanda, Ballarpur	750	85,237	...	...	...	...	4	3	1	4	...	...	...
	TOTAL	2,911	238,100	2	2	...	2	16	16	1	17	1·03	...	·68
Panjab	Jhelum	1,162	34,135	2	2	...	2	5	2	3	5	3·06	...	1·72
	Shahpur	54	3,028	...	...	...	...	...	...	...	..	...	...	...
	Mianwali	7	45	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	1,223	37,208	2	2	...	2	5	2	3	5	2·82	...	1·63
Eastern Bengal and Assam.	Lakhimpur	1,795	305,563	9	12	...	12	3	3	...	3	10·71	...	6·68
Baluchistan	Sibi, Khost	790	40,237	3	3	...	3	1	1	...	1	5·72	...	3·79
	Quetta, Sor Range	134	5,500	...	...	...	...	...	...	..	...	...	...	...
	Kalat, Mach and Digari	174	6,519	...	...	..	...	1	1	.	1	...	...	..
	Loralai, Loralai	7	193	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	1,105	52,449	3	3	...	3	2	2	...	2	3·82	...	2·71
N.-W. Frontier Province	Hazara	4	96	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (COAL)	109,291	11,294,227	97	104	15	119	127	103	31	134	1·48	·38	1·08
			B.—MICA.											
			Cwts.											
Bengal	Manbhum	19	2	...	...	...	..	...	...	...	...	...	...	...
	Monghyr	433	669	...	...	...	...	...	..	...	...	...	...	...
	Hazaribagh	5,351	17,277	5	7	...	7	4	3	1	4	2·25	...	1·30
	Gaya	1,075	3,953	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	6,878	21,901	5	7	...	7	4	3	1	4	1·69	...	1·01
Madras	Nellore	2,904	8,908	...	...	...	...	1	..	1	1	...	..	...
Rajputana	Ajmer-Merwara	83	1,202	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (MICA)	9,865	32,011	5	7	...	7	5	3	2	5	1·14	...	·70

APPENDIX II—*contd.*

Table No. 2—*contd.*

Classified Statement of Fatal and Serious Accidents in and about Mines regulated by the Indian Mines Act, 1901, during the year 1909—*contd.*

Province.	District and Mineral field.	Total average number of persons employed daily.	Total output.	Number of separate fatal accidents.	Number of deaths.			Number of serious non-fatal accidents.	Number of persons seriously injured.			Death-rate per 1,000 persons employed.		
					Below ground.	Above ground.	Total deaths.		Below ground.	Above ground.	Total number of persons injured.	Below ground.	Above ground.	Below ground and above ground.
			C.—MANGANESE.											
			Tons.											
Central Provinces	Nagpur	2,590	104,006	3	...	3	3	7	2	5	7	...	5·89	1·15
	Bhandara	901	58,374	...	...	...	...	1	...	1	1	...	...	...
	Balaghat	2,202	99,886	...	...	...	...	6	...	6	6	...	...	...
	Chhindwara	521	17,464	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	6,214	279,730	3	...	3	3	14	2	12	14	...	2·63	·48
Madras	Vizagapatam	3,930	59,818	2	1	1	2	...	...	...	...	·33	·74	·50
Bombay	Panch Mahals	651	17,657	1	1	...	1	1	1	...	1	3·14	...	1·53
	GRAND TOTAL (MANGANESE)	10,795	357,205	6	2	4	6	15	3	12	15	·25	1·42	·55
			D.—LIMESTONE.											
Central Provinces	Jabalpur, Katni	3,709	Tons. 56,002	...	...	...	...	...	...	...	...	...	...	...
Panjab	Hoshiarpur	90	500	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (LIMESTONE)	3,799	56,502	...	...	...	...	...	...	...	...	...	...	...
			E.—SALT.											
			Tons.											
Panjab	Shahpur	57	6,312	...	...	...	...	...	...	...	...	...	...	...
	Jhelum	944	109,539	...	...	...	...	11	10	1	11	...	...	...
	Mianwali	60	11,136	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (SALT)	1,061	126,987	...	...	...	...	11	10	1	11	...	...	...
			F.—GEMS.											
			Carats.											
Burma	Mogok (Rubies, etc.)	1,385	265,010	2	...	2	2	...	...	...	...	...	2·72	1·44
			G.—SLATE.											
			Tons.											
Bengal	Monghyr	275	1,423	...	...	...	...	3	1	2	3	...	...	...
Panjab	Kangra	260	3,700	2	...	2	2	...	...	...	...	...	11·11	7·69
	Gurgaon	187	1,931	...	...	...	...	2	...	2	2	...	...	...
	TOTAL	447	5,631	2	...	2	2	2	...	2	2	...	6·89	4·47
	GRAND TOTAL (SLATE)	722	7,054	2	...	2	2	5	1	4	5	...	5·61	2·77
			H.—GOLD.											
			Ounces.											
Bombay	Dharwar	1,750	5,615	7	6	2	8	3	4	...	4	5·33	3·19	4·57
Madras	Anantapur	599	...	6	7	...	7	2	2	...	2	21·14	...	11·68
	GRAND TOTAL (GOLD)	2,349	5,615	13	13	2	15	5	6	...	6	8·93	2·23	6·38

APPENDIX II.—*contd.*

Table 2—*concld.*

Classified Statement of Fatal and Serious Accidents in and about Mines regulated by the Indian Mines Act, 1901, during the year 1909—*concld.*

Province.	District and Mineral field.	Total average number of persons employed daily.	Total output.	Number of separate fatal accidents.	Number of deaths.			Number of serious non-fatal accidents.	Number of persons seriously injured.			Death-rate per 1,000 persons employed.		
					Below ground.	Above ground.	Total deaths.		Below ground.	Above ground.	Total number of persons injured.	Below ground.	Above ground.	Below and above ground.
			I.—IRON ORE.											
Bengal	Singhbhum	553	Tons. 15,214	...	...	...	...	...	...	...	...	...	...	...
			J.—WOLFRAMITE.											
Central Provinces	Nagpur	85	Cwts. 4	...	...	...	...	...	...	...	...	...	...	...
Burma	Mergui	... *	140		...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Wolframite).	85	144		...	...	...	...	...	...	...	...	...	...
			K.—MAGNESITE.											
Madras	Salem	149	Tons. 737	...	...	.	...	...	...	...	...	...	...	...
			L.—CHROMITE.											
Baluchistan	Quetta-Pishin	16	Cwts. 10,122	1	1	...	1	...	...	...	...	166·66	...	62·5
			M.—COPPER.											
Bengal	Singhbhum	355	Tons. 7	...	...	...	...	...	...	...	...	...	...	...
			N.—FULLER'S EARTH.											
Central Provinces	Jabalpur	†	Tons. 97	...	...	...	...	...	...	...	...	...	...	...
			O.—CLAY.											
Central Provinces	Jabalpur	84	Tons. 10,214	...	...	...	...	...	...	...	...	...	...	...
			P.—GALENA.											
Burma	Mandalay	8	Tons. 2	...	...	...	...	...	...	...	...	...	...	...
			Q.—TIN.											
Burma	Maliwun	87	Cwts. 1,520	...	...	...	...	...	...	...	...	...	...	...
			R.—STEATITE.											
Central Provinces	Jabalpur	86	Cwts. 11,296	...	...	...	...	...	...	...	...	...	...	...
			S.—BAUXITE.											
Central Provinces	Jabalpur	20	Tons. 32	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (ALL MINERALS).	140,710	Tons. 11,868,278 Cwts. 55,093 Ounces. 5,615 Carats. 265,010	126	127	25	152	168	126	50	176	1·40	·49	1·08

* Figures included along with that of Tin.
† Figures included along with that of Limestone.

APPENDIX II—*contd.*

Table No. 3.

The following table is a summary of the average number of persons working daily in and about mines regulated by the Indian Mines Act, 1901, during the year 1909.

Province.	Average number of persons working daily in and about mines getting						
	Coal.	Mica.	Manganese.	Limestone.	Salt.	Other minerals.	Total persons.
Bengal	102,253	6,878	...	...	...	1,183	110,314
Central Provinces	2,911	...	6,214	3,709	...	275	13,109
Madras	...	2,904	3,930	...	...	748	7,582
Eastern Bengal and Assam	1,795	...	...	...	...	...	1,795
Baluchistan	1,105	..	...	...	...	16	1,121
Panjab	1,223	...	...	90	1,061	447	2,821
Burma	...	...	...	...	...	1,480	1,480
Bombay	...	...	651	...	...	1,750	2,401
Rajputana	...	83	...	...	...	...	83
North-West Frontier Province	4	...	...	...	...	...	4
Total 1909	109,291	9,865	10,795	3,799	1,061	5,899	140,710
Total in preceding year	120,107	15,277	16,416	3,285	807	8,409	164,301
Difference	—10,816	—5,412	—5,621	+514	+254	—2,510	—23,591

Table No. 4.

QUANTITY OF MINERAL RAISED.

The following short summary shows the output of the principal minerals from mines regulated by the Indian Mines Act, 1901, for the year 1909.

Province.	Coal.	Manganese.	Mica.	Limestone.	Salt.
	Statute Tons.	Statute Tons.	Statute Cwts.	Statute Tons.	Statute Tons.
Bengal	10,660,811	...	21,901	...	...
Central Provinces	238,100	279,730	..	56,002	...
Madras	...	59,818	8,908	...	...
Eastern Bengal and Assam	305,563	...	...	...	...
Baluchistan	52,449	...	...	...	...
Panjab	37,208	...	...	500	126,987
Rajputana	...	...	1,202	...	...
Bombay	...	17,657	...	...	...
North-West Frontier Province	96	...	...	...	...
Total in 1909	11,294,227	357,205	32,011	56,502	126,987
Total in preceding year	12,149,020	494,942	46,208	101,569	93,779
Difference	—854,793	—137,737	—14,197	—45,067	+33,208

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APPENDIX II—*contd.*

Table No. 5.

The following table shows the average number of persons working daily in and about mines regulated by the Indian Mines Act, 1901, during the years 1908 and 1909.

ALL MINES UNDER THE ACT.

Description of workers.	Year 1908.	Year 1909.	Difference.
	Below ground.	Below ground.	Below ground.
Adult Males	65,982	57,604	−8,378
Adult Females	34,580	31,666	−2,914
Children under 12	1,889	1,225	−664
TOTAL BELOW GROUND	102,451	90,495	−11,956
	Above ground.	Above ground.	Above ground.
Adult Males	37,340	31,281	−6,059
Adult Females	19,938	15,821	−4,117
Children under 12	4,572	3,113	−1,459
TOTAL ABOVE GROUND	61,850	50,215	−11,635
TOTAL BELOW AND ABOVE GROUND	164,301	140,710	−23,591

ALL COAL-MINES UNDER THE ACT.

	Below ground.	Below ground.	Below ground.
Adult Males	48,888	44,549	−4,339
Adult Females	26,204	24,660	−1,544
Children under 12	1,116	685	−431
TOTAL BELOW GROUND	76,208	69,894	−6,314
	Above ground.	Above ground.	Above ground.
Adult Males	27,758	25,460	−2,298
Adult Females	14,116	12,311	−1,805
Children under 12	2,025	1,626	−399
TOTAL ABOVE GROUND	43,899	39,397	−4,502
TOTAL BELOW AND ABOVE GROUND	120,107	109,291	−10,816

Table No. 6.

The following table shows the fluctuations in the output of the principal minerals raised from mines classed under the Indian Mines Act, 1901. The other minerals raised are gems, slate, gold, iron ore, magnesite, chromite, copper, tin, steatite, bauxite, fuller's earth, clay, galena and wolframite.

YEAR.	Coal.	Manganese.	Mica.	Limestone.	Salt.
	Tons.	Tons.	Cwts.	Tons.	Tons.
1899	4,622,242	87,126	10,860	1,177	78,754
1900	5,452,408	92,458	18,320	...	79,996
1901	6,251,522	162,057	19,900	28,000	90,242
1902	6,790,507	144,037	21,360	30,091	87,361
1903	6,812,725	171,223	20,100	35,238	90,667
1904	7,561,338	138,733	21,320	50,847	107,413
1905	7,770,471	204,194	25,548	93,170	94,078
1906	9,112,663	436,442	50,438	48,836	118,023
1907	10,526,468	642,082	44,919	73,222	101,703
1908	12,149,020	494,942	46,208	101,569	93,779
1909	11,294,227	357,205	32,011	56,502	126,987

Table No. 7.

The following table shows the amount of coal raised, the average number of persons working daily and the death-rates during the years 1899 to 1909 in respect of coal mines under the Indian Mines Act, 1901.

Year.	Amount of coal raised.	Average number of persons working daily below and above ground.	Number of deaths below and above ground.	Death-rates.	
				Per 1,000,000 tons raised.	Per 1,000 persons working daily below and above ground.
1899	4,622,242	65,795	73	15·79	1·11
1900	5,452,408	80,003	52	9·53	·64
1901	6,251,522	85,361	58	9·28	·67
1902	6,790,507	89,503	59	8·69	·66
1903	6,812,725	79,561	67	9·83	·84
1904	7,561,338	82,002	55	7·27	·67
1905	7,770,471	79,506	58	7·46	·72
1906	9,112,663	90,159	80	8·78	·89
1907	10,526,468	102,689	89	8·45	·86
1908	12,149,020	120,107	164	13·49	1·36
1909	11,294,227	109,291	119	10·53	1·08

Table No. 8.

Statement showing the output of coal, the number of persons employed and the number of tons of coal raised per person employed in and about the coal mines of the principal coal-producing countries of the world.

Year.	Countries.	Tons of coal raised.	Persons employed.	Tons raised per person employed.
1908	United Kingdom	261,528,795	972,232	268
1907	United States	480,360,272	680,492	705
„	Germany	226,778,397	611,792	370
„	Austria	44,215,751	126,321	350
„	France	40,513,257	183,862	220
„	Belgium	26,130,059	142,699	183
„	Nova Scotia	5,730,660	12,133	472
„	British Columbia	2,219,608	6,059	366
„	Australia	9,681,044	19,434	498
„	Natal	1,530,043	7,233	211
„	Transvaal	2,574,485	9,298	276
„	Japan	15,216,015	128,772	118
„	New Zealand	1,831,009	3,910	468
1906	Russia	23,949,860	145,392	164
	Totals and average	1,142,259,255	3,049,629	374
	British India	**11,294,227**	**109,291**	**103**

APPENDIX II—*contd.*

Table No. 9.

Fatal accidents and deaths in mines regulated by the Indian Mines Act, 1901, during the year 1909, classified according to the mineral worked.

Mineral.	Province and Mineral area.	Number of separate fatal accidents.	Number of deaths.								Total below and above ground.
			Below ground.				Above ground.				
			Adult males.	Adult females.	Children (under 12).	Total.	Adult males.	Adult females.	Children (under 12).	Total.	
Coal	Baluchistan	3	3	...	...	3	...	...	...	...	3
	Bengal — Daltonganj	...	...	...	...	...	...	...	...	...	...
	Bengal — Giridih	5	6	...	...	6	3	...	...	3	9
	Bengal — Jharia	46	33	9	...	42	5	1	...	6	48
	Bengal — Raniganj	30	33	4	...	37	5	1	...	6	43
	Total (Bengal)	81	72	13	...	85	13	2	...	15	100
	Central Provinces	2	2	...	...	2	...	...	...	...	2
	Eastern Bengal and Assam	9	10	2	...	12	...	...	...	...	12
	Panjab	2	2	...	...	2	...	...	...	...	2
	Total Coal	97	89	15	...	104	13	2	...	15	119
Mica	Bengal	5	7	...	...	7	...	...	...	...	7
Manganese	Central Provinces	3	...	...	...	...	2	1	...	3	3
	Madras	2	...	1	...	1	...	1	...	1	2
	Bombay	1	1	...	...	1	...	...	...	...	1
	Total Manganese	6	1	1	...	2	2	2	...	4	6
Gems	Burma	2	...	...	...	...	2	...	...	2	2
Slate	Panjab	2	...	...	...	...	2	...	...	2	2
Gold	Bombay	7	6	...	...	6	1	...	1	2	8
	Madras	6	7	...	...	7	...	...	...	...	7
	Total Gold	13	13	...	...	13	1	...	1	2	15
Chromite	Baluchistan	1	1	...	...	1	...	...	...	...	1
Grand total, all minerals		126	111	16	...	127	20	4	1	25	152

APPENDIX II—*contd.*

Table No. 10.

Fatal accidents and deaths classified according to causes.

Causes of Accidents.	1909.				
	Number of separate accidents.	Deaths.			
		Adult males.	Adult females.	Children (under 12).	Total.
BELOW GROUND.					
Explosions of fire-damp	3	6	...	...	6
Falls in Mines.					
Falls of roof	22	29	2	...	31
„ „ side	23	20	6	...	26
Total	45	49	8	...	57
In Shafts.					
Overwinding	1	1	...	...	1
Ropes and chains breaking	1	2	...	...	2
Whilst ascending or descending by machinery	7	7	...	...	7
Falling into the shaft from the surface	1	1	...	...	1
Falling from part of the way down	6	11	...	...	11
Things falling from the surface	2	2	...	...	2
Things falling from part of the way down	2	2	...	...	2
Miscellaneous	3	4	...	...	4
Total	23	30	...	...	30
Miscellaneous below ground.					
By explosives	5	5	...	...	5
Irruptions of water or falling into water	3	3	...	...	3
Haulage	15	14	2	...	16
By underground machinery	...	...	...	...	...
Sundries underground	10	4	6	...	10
Total	33	26	8	...	34
Total below ground	104	111	16	...	127
ABOVE GROUND.					
By surface machinery	3	3	...	...	3
On surface railways and tramways	6	5	1	...	6
Miscellaneous on surface	13	12	3	1	16
Total above ground	22	20	4	1	25
Total below and above ground	126	131	20	1	152

APPENDIX II—*contd.*

Table No. 11.

ACCIDENTS, 1909.

Classified according to cause and mineral worked.

MINERAL WORKED.	Number of separate fatal accidents.	NUMBER OF PERSONS KILLED.											DEATH-RATE PER 1,000 PERSONS EMPLOYED.		
		Explosions of fire-damp.	Falls of roof.	Falls of side.	In shafts.	Explosives.	Suffocation by gases.	Irruptions of water or falling into water.	Haulage.	Miscellaneous below ground.	Surface.	Total deaths.	Below ground.	Above ground.	Below and above ground.
Coal . . .	97	6	29	19	19	3	...	3	15	10	15	119	1·48	·38	1·08
Mica . . .	5	...	2	5	...	...	...	...	...	...	...	7	1·14	...	·70
Manganese . .	6	...	...	1	...	...	...	...	1	...	4	6	·25	1·42	·55
Gems . . .	2	...	...	...	...	...	...	...	...	...	2	2	...	2·72	1·44
Slate . . .	2	...	...	...	...	...	...	...	...	...	2	2	...	5·61	2·77
Gold . . .	13	...	...	...	11	2	...	...	...	...	2	15	8·93	2·33	6·38
Chromite . .	1	...	...	1	...	...	...	..	...	...	...	1	166·66	...	62·5
Total 1909 .	126	6	31	26	30	5	...	3	16	10	25	152	1·40	·49	1·08
Total preceding year.	135	22	57	31	27	8	...	2	22	5	20	194	1·70	·32	1·18
Difference . .	—9	—16	—26	—5	+3	—3	...	+1	—7	+5	+5	—43	—·30	+·17	—·10

Table No. 12.

Statement of Prosecutions instituted under the Indian Mines Act (VIII of 1901) during the year ending 31st December 1909.

PROVINCE.	District.	Number of Prosecutions.	Number of persons prosecuted.	Number convicted.	REMARKS.
Bengal	Asansol . . .	1	1	1	Under rules framed under sec. 20 of the Indian Mines Act, 1901.

APPENDIX II—*contd.*

Table No. 13.

Number of Inspections by District and other Officers, 1909.

District and Mineral area.			Number of mines inspected.		
			Once.	Twice.	More than twice.
COAL.					
Bengal—					
Sonthal Parganas			1	...	...
Burdwan	Raniganj		1	...	...
Bankura	Raniganj		...	2	...
Manbhum	Raniganj		1	1	...
Birbhum	Raniganj		1	...	...
Manbhum, Jharia			2	...	...
Hazaribagh, Giridih			1	...	...
,, Bokaro-Ramgarh			1	...	...
		Total	8	3	...
Panjab, Jhelum			...	1	...
Baluchistan	Loralai		1	...	...
Baluchistan	Kalat, Mach and Digari		...	1	...
Baluchistan	Quetta, Sor Range		...	...	3
		Total	1	1	3
		Total at Coal Mines	9	5	3
MICA.					
Bengal, Gaya			1	...	...
Madras—Nellore			13	1	...
		Total at Mica Mines	14	1	...
MANGANESE.					
Central Provinces, Nagpur			1	...	...
LIMESTONE.					
Central Provinces			3	1	...
SALT.					
Panjab, Jhelum			1	...	...
GEMS.					
Burma, Mogok			1	...	...
SLATE.					
Bengal, Monghyr			1	...	...
IRON.					
Bengal, Singhbhum			1	...	...
		GRAND TOTAL	31	7	3

APPENDIX II—*contd.*

Table No. 14.

Mines opened and closed during the year ending 31st December, 1909.

Province.	District.	Number of mines opened.	Number of mines closed.
	A.—COAL.		
Bengal	Hazaribagh: Bokaro-Ramgarh	1	2
	Hazaribagh: Giridih	...	1
	Manbhum: Jharia	8	37
	Manbhum: Raniganj	6	17
	Burdwan, Raniganj	8	13
	Palamau, Daltonganj	1	1
	Sambalpur, Hingir-Rampur	1	...
Total		25	71
Panjab	Jhelum	1	4
	Shahpur	...	3
	Mianwali	...	1
Total		1	8
Central Provinces	Chhindwara	...	4
Eastern Bengal and Assam	Lakhimpur	1	...
Baluchistan	Quetta, Sor Range	1	...
	Kalat, Mach and Digari	2	...
	Loralai	...	1
Total		3	1
Total (Coal)		30	84
	B.—MICA.		
Bengal	Manbhum	1	1
	Monghyr	...	2
	Hazaribagh	79	45
	Gaya	...	2
Total		80	50
Madras	Nellore	13	19
Rajputana	Ajmer-Merwara	1	...
Total (Mica)	.....	94	69

APPENDIX II—*concld.*

Table No. 14—*concld.*

Province.	District.	Number of mines opened.	Number of mines closed.
	MANGANESE.		
Madras	Vizagapatam	...	6
Central Provinces	Nagpur	1	...
	Chhindwara	...	2
Total		1	2
Total (Manganese)		1	8
	LIMESTONE.		
Central Provinces	Jabalpur	5	1
	SLATE.		
Panjab	Gurgaon	1	...
Bengal	Monghyr	1	...
Total		2	...
	GOLD.		
Bombay		...	5
	IRON.		
Bengal	Singhbhum	1	...
	WOLFRAMITE.		
Central Provinces	Nagpur	1	...
	STEATITE.		
Central Provinces	Jabalpur	2	...
	BAUXITE.		
Central Provinces	Jabalpur	1	1

APPENDIX III.

Table No. 1.

Inspections and enquiries made under Section 5 of the Land Acquisition (Mines) Act, 1885, during the year ending 31st December 1909.

Registered number.	Name of mine and description of land acquired.	Name of the owner of the mine.	Date of gazetted declaration.	Name of Inspector making the enquiry.
1	Sitalpur Coal Mine— Sanctoria Branch of the Bengal Nagpur Railway.	Bengal Coal Co., Ld.	23rd April 1909	G. C. Leach.
64	Sudamdih Coal Mine— Pathurdih Link of the Bengal Nagpur Railway.	Empire Coal Co., Ld.	7th June 1909, and 4th October 1909.	G. F. Adams.
87	Kendwadih Coal Mine— Jamadoba Branch of the Bengal Nagpur Railway.	Hariladih Coal Co., Ld.	4th March 1910 .	Ditto.
118	Bhutgoria Coal Mine— Jamadoba Branch of the Bengal Nagpur Railway and certain sidings taking off from it.	Aldih Coal Co., Ld.	22nd July 1909 .	ditto.
121	Jharia Khas Coal Mine— Surataur siding of the East Indian Railway.	Standard Coal Co., Ld.	30th July 1909 .	Ditto.
122	Jharia Khas Coal Mine— No. 3 siding of the Bengal Nagpur Railway.	Ditto	20th July 1909 .	Ditto.
124	Akhalpur Coal Mine— Toposi-Baraboni relieving line of the East Indian Railway and sidings.	Hariladih Coal Co., Ld.	2nd December 1909 .	J. R. R. Wilson.
125	Sendra Coal Mine— Dhanbaid-Katrasgarh main line of the Jharia Branch of the East Indian Railway.	Sendra Coal Co., Ld.	9th August 1909 .	G. F. Adams.
127	Sijua Coal Mine— Sijua siding of the East Indian Railway.	Sijua Coal Co., Ld.	2nd July 1909 .	Ditto.
128	Raghunathbatti Coal Mine— Sitarampur-Baraboni line of the East Indian Railway.	Sudih Coal Co., Ld.	12th July 1909 .	G. C. Leach.
129	Tetturia Coal Mine— Tetturia assisted siding of the East Indian Railway.	New Tetturia Coal Co., Ld.	...	G. F. Adams.
130	Budruchak Coal Mine— Mudidih-Angarpatra siding (Southern alignment) of the East Indian Railway.	Budruchak Coal Mining Co., Ld.	26th July 1909 .	J. R. R. Wilson.
133	Jotejanaki Coal Mine— Prankissen extension of the Singaran siding, Ondal Loop, East Indian Railway.	P. K. Chatterji .	3rd August 1909	R. R. Simpson.
134	Nudkhurki Coal Mine— Katras-Khanudih extension of the Jharia Branch of the East Indian Railway.	Auckland Coal Co., Ld.	2nd December 1909 .	J. R. R. Wilson.

APPENDIX III—*contd.*

Table No. 1—*contd.*

Inspections and enquiries made under Section 5 of the Land Acquisition (Mines) Act, 1885, during the year ending 31st December 1909 - *contd.*

Registered number.	Name of mine and description of land acquired.	Name of the owner of the mine.	Date of gazetted declaration.	Name of Inspector making the enquiry.
135	Nuni Coal Mine— Sitarampur-Baraboni Branch of the East Indian Railway.	Damra Coal Co., Ld.	21st January 1910 .	R. R. Simpson.
136	Gararia Coal Mine— Dhanbaid-Katrasgarh Branch of the East Indian Railway.	Tribhuban Das Howji.	15th March 1910 .	J. R. R. Wilson.
137	Sutikdih Coal Mine— Bengal Nagpur Railway and assisted siding off that Railway.	Sutikdih Coal Co., Ld.	...	Ditto.
138	Jairamdanga Coal Mine— Ondal-Sitarampur Loop of the East Indian Railway.	New Birbhum Coal Co., Ld.	25th November 1909 .	R. R. Simpson.
139	South Gobindpur Coal Mine— Gobindpur siding, Katras-Khanudih extension of the Jharia Branch, East Indian Railway.	South Gobindpur Collieries, Ld.	13th September 1909 .	J. R. R. Wilson.
140	Joyrampur Coal Mine— Jinagora Branch siding No. 1 of the East Indian Railway.	Khimji Moorji & Co.	16th September 1909 .	Ditto.
141	Kusunda Coal Mine— Damuda Branch and siding of the East Indian Railway.	Patel & Co.	2nd December 1909 .	Ditto.
142	Bhowra Coal Mine— Bhowra Branch of the Bengal Nagpur Railway.	Eastern Coal Co., Ld.	6th September 1909 .	G. F. Adams.
143	Central Kurkend Coal Mine— Khoira-Kurkend Branch of the East Indian Railway.	Central Kurkend Coal Co., Ld.	18th October 1909 .	J. R. R. Wilson.
144	Kusunda Coal Mine— Damuda Branch and its sidings of the East Indian Railway.	Kusunda and Nayadi Collieries, Ld.	.....	G. F. Adams.
145	Kurkend Coal Mine— Kurkend siding extension and assisted siding for the East Kurkend Coal Company's Kurkend Colliery, Damuda Branch, East Indian Railway.	Marine Coal Co., Ld.	2nd October 1909 .	J. R. R. Wilson.
146	Lodna Coal Mine— Jinagora siding off the Damuda Branch of the East Indian Railway.	Lodna Colliery Co., Ld.	.....	Ditto.
147	Nandi Coal Mine— Extension of the Nandi assisted siding of the East Indian Railway.	Adjai Coal Co., Ld.	.....	R. R. Simpson.
148	Baraboni Coal Mine— Ghusik and Muslia Colliery siding, Domohani Branch, East Indian Railway.	Ghusik and Muslia Collieries, Ld.	.....	J. R. R. Wilson.

APPENDIX III—*contd.*

Table No. 1—*concld.*

Inspections and enquiries made under Section 5 of the Land Acquisition (Mines) Act, 1885, during the year ending 31st December 1909—*concld.*

Registered number.	Name of mine and description of land acquired.	Name of the owner of the mine.	Date of gazetted declaration.	Name of Inspector making the enquiry.
150	Bhuggutdih Coal Mine— Damuda Branch, Jharia extension of the East Indian Railway.	Bengal Nagpur Coal Co., Ld.	21st January 1910 .	J. R. R. Wilson.
151	Jamadoba Coal Mine— Extension of the Joyrampur Branch, Jerapuka and Dongri sidings of the Bengal Nagpur Railway.	Indian Collieries Syndicate, Ld.	8th March 1910 .	G. F. Adams.
152	Kustore Coal Mine— Alkusa siding of the East Indian Railway.	Kusunda and Nayadi Collieries, Ld.	.....	Ditto.
153	Tettulia Coal Mine— Katras-Khanudih extension of the East Indian Railway and a siding taking off it.	Haresmal Ram Chandra.	.....	J. R. R. Wilson.
154	Gararia Coal Mine— Katrasgarh Branch of the East Indian Railway.	Ramji Bechar Dass	.....	Ditto.

Table No. 2.

Inspections and enquiries made under Section 11 of the Land Acquisition (Mines) Act, 1885, during the year ending 31st December 1909.

Registered number.	Name of mine and description of land acquired.	Name of the owner of the mine.	Date of declaration.	Name of Inspector making the enquiry.
16	Panchgatchia Coal Mine— Ikrah Branch of the East Indian Railway.	Lutchipur Coal Co., Ld.	3rd August 1909 .	G. C. Leach.
29	Bansjora Coal Mine— Dhanbaid-Katrasgarh Branch of the East Indian Railway.	Bansjora Coal Co., Ld.	2nd September 1909 .	G. F. Adams.
40	Mouzra Coal Mine— Ondal Loop, Toposi Branch of the East Indian Railway.	Basanti Oakdene Coal Co., Ld.	22nd September 1909 .	R. R. Simpson.
41	Noonoodih Coal Mine— Noonoodih Colliery siding off the Jamadoba Loop of the Bengal Nagpur Railway.	Bengal Iron and Steel Co., Ld.	29th July 1909 .	G. C. Leach.
63	Shampur Coal Mine— Shampur siding off the Jharia Branch of the East Indian Railway.	Shampur Coal Co., Ld.	.....	Ditto.
99	Tentulia Coal Mine— Katras-Khanudih extension of the East Indian Railway.	Tentulia Colliery Co.	30th March 1909 .	G. F. Adams.

APPENDIX III—*contd.*

Table No. 3.

List of plans of abandoned and discontinued mines received during the year 1909.

Registered number.	Name and situation of mine.	Name and number of seam.	Name of mineral worked.	Name of owner.	Date of abandonment or discontinuance.
40	Bhowra Coal Mine, Jharia P. O.	No. 1 Seam (Jharia)	Coal	Eastern Coal Company, Ld.	28th June 1907.
41	Phularitand Coal Mine, Katrasgarh P. O.	No. 14 Seam	Coal	Phularitand Coal Co., Ld.	8th April 1908.
42	Raghunathchak Coal Mine, Raniganj P. O.	Raghunathchak Seam	Coal	Jagganath Marwari	23rd December 1908.
43	Damra Coal Mine, Kalipahari P. O.	Ghusick Upper Seam	Coal	Damra Coal Co.	October 1908.
44	Basantipur Coal Mine, Chowkidanga P. O.	Basantipur or Mamudpur Seam.	Coal	Basanti Oakdene Coal Co.	15th February 1909.
45	Rajhara Coal Mine, Rajhara P. O.	Rajhara Seam	Coal	Bengal Coal Co., Ld.	19th January 1909.
46	Sonachora Coal Mine, Raniganj P. O.	Sonachora Seam	Coal	Sahana Coal Co.	21st March 1908.
47	Govindpur Coal Mine, Kastrasgarh P. O.	No. 10 Seam	Coal	Govindpur Coal Co., Ld.	13th December 1908.
48	Akhalpur Coal Mine, Nandi P. O.	Koithi Seam	Coal	Hariladih Coal Co., Ld.	July 1908.
49	Sinidih Coal Mine, Katrasgarh P. O.	No. 12 Seam	Coal	Sinidih Coal Co., Ld.	19th February 1909.
50	Pipratand Coal Mine, Katrasgarh P. O.	Upper Seam	Coal	Pipratand Coal Co., Ld.	20th February 1909.
51	Joyrampur Coal Mine, Jharia P. O.	No. 10 Seam	Coal	B. R. & Co.	4th April 1909.
52	Bhutdoba Coal Mine, Kalipahari P. O.	Bhutdoba or Upper Kalipahari Seam.	Coal	Bhagirathi Coal Co.	March 1909.
53	West Gopalichak Coal Mine, Kusunda P. O.	Nos. 16 and 17 Seams	Coal	Gopalichak Coal Co., Ld.	10th May 1909.
54	Dhobidih Coal Mine, Giridih P. O.	Hill Seam	Coal	Bengal Giridih Coal Co., Ld.	17th April 1909.
55	Niga Valley Coal Mine, Kalipahari P. O.	Top Seam	Coal	Niga Valley Coal Co.	About May 1908.
56	Loyabad Coal Mine, Bansjora P. O.	No. 17 Seam	Coal	Barakar Coal Co., Ld.	7th March 1909.
57	Ditto	No. 15 Seam Top and Bottom Sections.	Coal	Ditto	17th February 1908.
58	Kanchka Coal Mine, Kalipahari P. O.	Ghusick Seam	Coal	Damra Coal Co., Ld.	June 1909.
59	Damra and Kanchka Coal Mines, Kalipahari P. O.	Kushadanga or Ghusick Bottom Seam.	Coal	Damra Coal Co., Ld.	May 1909.
60	Busserya Coal Mine, Kusunda P. O.	No. 13 Seam	Coal	Busserya Coal Co., Ld.	7th July 1907.
61	Kendwadih Coal Mine, Katrasgarh P. O.	Nos. 7 and 8 Seams.	Coal	C. M. Company	.....
62	Pandedih Coal Mine, Katrasgarh P. O.	No. 8 Seam	Coal	Mit Naryan Singh and others.	27th March 1909.
63	Jogta Coal Mine, Sijua P. O.	Nos. 12 and 15 Seams	Coal	Agabeg Brothers	30th April and 25th June 1909.

APPENDIX III—*contd.*

Table No. 3—*contd.*

List of plans of abandoned and discontinued mines received during the year 1909—*concld.*

Registered number.	Name and situation of mine.	Name and number of seam.	Name of mineral worked.	Name of owner.	Date of abandonment or discontinuance.
64	Egarcoor Fireclay Mine, Chirkunda P. O.	No. 1 Incline . .	Fireclay .	Burn & Co. . . .	16th February 1909.
65	Sinidih Coal Mine, Katrasgarh P. O.	Nos. 9, 10 and 11 Seams .	Coal .	Sinidih Coal Co., Ld. .	Nos. 9 and 10—9th July 1909 and No. 11—10th June 1909.
66	Kalipahari Coal Mine, Kalipahari P. O.	Kalipahari Top Seam or Bhutdoba Seam.	Coal .	K. D. Singh & Co. . .	March 1909.
67	New Ghusik, Kalipahari P. O.	Ghusick Seam . .	Coal .	B. D. Mukherji . .	24th April 1909.
68	Egarcoor Coal Mine, Raniganj P. O.	.....	Coal .	Burn & Co. . . .	31st May 1909.
69	Bengal Bhatdih Coal Mine, Katrasgarh P. O.	Top and Middle Seams .	Coal .	Bengal Bhatdih Coal Co., Ld.	14th May 1909.
70	Chinchuria Coal Mine, Asansol P. O.	Bottom Seam . .	Coal .	Baraboni Coal Concern, Ld.	22nd May 1909.
71	Mandra Coal Mine, Nowagarh P. O.	Nos. 8, 9 and 10 Seams .	Coal .	Mandra Coal Co. . .	10th March 1909.
72	Kantapahari Coal Mine, Katrasgarh P. O.	No. 10 Seam . . .	Coal .	A. R. Mandol . .	5th June 1909.
73	Joyramchak Coal Mine, Asansol P. O.	Gopalpur Seam . .	Coal .	Oriental Coal Co. . .	2nd July 1909.
74	Koolustore Coal Mine, Chowkidanga P. O.	Benakuri Seam . .	Coal .	Koolustore Coal Co, Ld. .	December 1908.
75	Dherewali Coal Mine, Dalwal P. O.	Dherewali Adit . .	Coal .	P. Bhola Nath . .	February 1909.
76	Chatterwal Coal Mine, Dalwal P. O.	East and West Adits .	Coal .	Ditto . .	East—March 1909. West—January 1908.
77	Wahgroowali Coal Mine, Dalwal P. O.	Wahgroowali Adit . .	Coal .	P. Bhola Nath . .	January 1908.
78	Chiti Daud Coal Mine, Abbotabad P. O.	No. 1 Wadala . . No. 4, East Chiti Daud.	Coal .	Panjab Coal Company .	No. 1 Wadala—12th February 1909. No. 4 East Chiti Daud—5th March 1909.
79	Murulidih Coal Mine, Katrasgarh P. O.	Lower Seam . . .	Coal .	Bengal Coal Co., Ld. .	1st November 1908.
80	Chandrabad Coal Mine, Jharia P. O.	Nos. 7 and 8 Seams . .	Coal .	Ramjus Agarwalla . .	1st January 1909.

Table No. 4.

SIBPUR COLLEGE.

THE MINING CLASSES.

CIRCULAR.

THESE classes are attached to the Overseer Section of the Apprentice Department.

General explanation.—The Mining Classes are designed to afford theoretical training in the principles of mining generally, to prepare students for positions of responsibility in coal or metal mines, and, in the case of students attending for instruction in coal mining, to qualify them to appear for the examinations of mine managers, as required by the Indian Mines Act, VIII of 1901.

APPENDIX III—*contd.*

Table No. 4—*contd.*

The course at Sibpur for regular mining students will extend over four years. At the end of the second year the sub-overseer examination is held. The specialised instruction in mining at Sibpur is given in the third and fourth years of the college course, according to the attached syllabus, and the diploma examination takes place at the end of the fourth year.

The classes are open to both regular students and special students.

Regular students—Are those who have qualified for admission by passing the sub-overseer examination of the Civil Engineering College, or an equivalent test of other college.

Their age limits are 17 years minimum and 19 years maximum on admission.

Special students.—Persons resident in Bengal, who have been employed upon mines, will be admitted as special students under the following conditions :—

(*a*) that they have completed at least two years' practical work upon a mine ; and

(*b*) that they have passed (*i*) the B. Final Examination, (*ii*) the Matriculation or Entrance Examination of any Indian University, or (*iii*) any test equivalent to the Middle School Examination of the Code for European Schools.

There is no limit of age for such special students.

All applications for admission from outside candidates should be posted so as to reach the Principal's office by 1st April.

Regular students should apply in the proper form available from the Principal's office.

Special students must provide, (*a*) proof of educational attainments, and (*b*) a statement showing the nature and extent of their employment upon mines and the period thereof, supported by certificates from the mine managers under whom they have worked.

SCHOLARSHIPS AWARDED BY THE GOVERNMENT OF BENGAL.

For regular students.—Two scholarships of Rs. 12 monthly and three of Rs. 6 are provided. These will be awarded on the results of the sub-overseer examination by the Director of Public Instruction on the recommendation of the Principal. Students trained at the Civil Engineering College or any affiliated Technical School in Bengal are eligible for these scholarships. If they are on the Reduced fee list, they will be charged full tuition fees.

For special students.—Two scholarships of Rs. 150 monthly for European candidates and two of Rs. 50 monthly for Indian candidates, each tenable for two years, are offered. These will be awarded annually by the Director of Public Instruction on the recommendation of the Mining Advisory Board.

These scholarships are available for candidates who have had at least two years' actual experience of colliery work. They must have passed the Calcutta University Entrance Examination or an equivalent. For Europeans the Middle Scholarship Examination of the Code for European Schools or equivalent is accepted.

There is no limit of age.

Application for these scholarships should be made to the Principal of the Civil Engineering College, when applying for admission.

There is no residential accommodation available at the college for special students, scholarship-holders or otherwise : they must make their own arrangement for board and lodging, and must attend the college daily from 8 A.M. A mid-day meal will be supplied if desired at the college at a definite monthly charge to be fixed by the Principal.

SCHOLARSHIPS AWARDED BY THE GOVERNMENT OF EASTERN BENGAL AND ASSAM.

For regular students.—Three of the value of Rs. 15, one being reserved for each of the following classes, namely, European, Muhammadan, Hindu confined to students domiciled in Eastern Bengal and Assam.

For special students qualified as above.—One of Rs. 30 for an European. Two of Rs. 20—one for a Muhammadan and one for a Hindu. The rates for special students are fixed on the understanding that they will reside at the college hostel. If accommodation is not available, Government are prepared to consider an increase. Applications for these scholarships to be made to the Director of Public Instruction of Eastern Bengal and Assam.

The session begins each year on or about the first Monday in May. The college closes for the long vacation about the first week of August and re-opens about the end of October.

Special students must pass all college test examinations and must appear at the diploma examination held at the end of the course.

The following fees will be charged from special students :—

Caution money deposit.—Rs. 5, which will be returned on leaving the college after deducting any charge-dues owing.

Tuition fee.—Rs. 3 monthly payable for 12 months in the year.

Mid-day meal.—Rs. 10 monthly for Europeans, and Rs. 5 for Indians.

Table No. 4—*concld.*

All fees become due on the 15th of the month.

Regular students, who must be residents, will be charged in full the fees noted in the Rules of the Apprentice Department.

A camp of practical mining and surveying will be held for six weeks in the cold weather of each session in the colliery districts.

SYLLABUS OF MINING COURSES.

Course I.

Geology applied to Mining.—(One lecture per week.)

Classification of rocks: characteristic fossils and economic products of the principal systems.

Structure of rocks; foldings, faults, cleavage, formation of mineral veins.

Principles of geological surveying: methods employed in constructing geological maps and sections. Special reference to the geology of India.

Mining Engineering.—(Two lectures per week.)

Boring by hand and power machines.

Sinking and lining shafts; various methods employed in special cases.

Systems of haulage, underground and aboveground, aërial ropeways.

Hoisting, headgear, ropes, safety appliances.

Mining legislation.

Section A.—(One lecture per week.)

Methods of working coal; shaft pillars, preliminary work, and various methods of working the seams. Special reference to thick coal working as practised in England and different parts of the world.

Shot-firing; coal-cutting by machinery.

Surface subsidence and under-sea working.

Timbering and other supports.

Coal mine plans and sections, connecting surface and under-ground surveys.

Section B.—(One lecture per week.)

Prospecting for and methods of working mineral veins.

Alluvial mining and open workings.

Hydraulic mining; dredging for gold; ore-beds and deep leads overhand and underhand stopping.

Hand and power drilling; blasting timbering.

Metal mine plans.

Course II.

Descriptive Mineralogy.—(One lecture per week.)

Physical properties of minerals; description of various ores and fuels; methods of determination.

Prospecting operations.

Mining Engineering.—(Two lectures per week during first-half of session.)

Drainage of mines; adit levels; pumping machinery; dams; boring against old workings.

Ventilation of mines; natural and artificial ventilation; splitting and regulating air-currents; types of fans; water-gauge and anemometer.

Power-application in a mine; discussion of relative merits of steam, water, compressed-air, electricity, and oil, as sources of applied power.

Section A.—(One lecture per week.)

Description of gases found in coal mines; colliery explosions; safety lamps; instruments for detecting fire-damp; treatment of men overcome by foul air.

Arrangement of surface works at a colliery; sorting and screening coals; coal-washing, briquette making, cooking, and bye-products.

Section B.—(One lecture per week.)

Surface works of metal mines, sorting, crushing, sizing, and concentration of various ores. Modern ore-dressing machinery, and slime tables.

Special reference to treatment of gold, silver, copper, lead and zinc.

Cyanide and Chlorine treatment of slimes.

Table No. 5.

MINING INSTRUCTION IN BENGAL.

Preliminary.—The scheme of instruction is designed to afford facilities for persons employed in coal mines to be trained in the Principles of Mining.

APPENDIX III—*contd.*

Table No. 5—*contd.*

The following centres have been established and Sub-Committees appointed :—

RANIGANJ DISTRICT.

Dishargarh Centre.	*Charanpur Centre.*
Mr. G. C. Leach.	Mr. R. R. Simpson.
„ Wm. Miller.	„ R. Mitchell.
„ G. F. Scott.	„ E. M. Patterson.
„ W. McFarlane.	„ A. Russell.

JHARIA DISTRICT.

Jharia Centre.	*Sijua Centre.*
Mr. G. F. Adams.	Mr. G. F. Adams.
„ J. J. Turnbull.	„ H. C. Veasey.
„ A. Gregory.	„ E. H. Bennertz.
„ A. S. Thomson.	„ S. McMurtrie.

The Mining Instructor will visit each centre once a week.

The course of instruction, consisting of about 25 lectures, will commence in November 1909 and continue to the beginning of the rainy season, 1910.

An examination will be held at the end of the course.

A candidate who passes the examination will receive a certificate recording his success. No candidate, however, will be permitted to sit for examination unless he has attended fifty per cent. of the lectures.

SYLLABUS OF THE COURSE OF INSTRUCTION.

The course will treat principally of the more practical operations in actual mining, with special reference to India, and the principles underlying such operations will be thoroughly discussed.

Special attention will be paid to the various methods of working thick seams.

PART I.

Geology.—General structure of the crust of the earth : Definitions and descriptions of fault, dyke, outcrop, dip, strike, unconformity, etc. ; composition and properties of coal ; special reference to the coal measures in India : Importance of recording results of observations.

Exploration.—Advantages of borings ; driving through faults, washouts, dykes, etc. ; methods of maintaining the direction and gradient of such drivages.

Boring and Winning.—Different systems of boring ; choice of methods ; cost of boring. Winning coal by inclines, adits, shafts, shafts and crosscut.

Sinking.—Site of colliery ; position of shafts, excavation and shape ; blasting with use of safety fuse and electric battery ; explosives and detonators, their safe storing and handling ; lining the shafts and scaffolding ; sinking pit banking arrangements, bowks, water-barrels, bull chain and hook, etc. Special difficulties in sinking and how to deal with them.

Opening out and methods of working.—Shafts, pillars ; arching or supporting the pit bottom ; quarrying ; pillar and stall ; double road stall ; long wall.

Thick coal.—Methods of working in South Staffordshire and Warwickshire, in Upper Silesia and France ; methods of working thick seams by Longwall, by inclined slices, and by horizontal slices, also the Rabatage System.

Timbering and Supporting.—Fixing of props and double timber ; chocks or cogs ; special methods of timbering to withstand pressure from the roof, sides and floor ; securing dangerous holes in the roof due to heavy falls ; use of iron or steel girders ; stowing and packing ; arching.

Gases met with in Coal-mines.—Their experimental preparation by chemicals and illustration of their physical and physiological properties ; methods of detecting ; explosion and gob fires.

Ventilation.—Natural and artificial methods ; coursing the air ; use of stoppings, brattices, doors, airbridges, regulators, etc. ; measuring the quantity of air, use of thermometer, barometer, water-gauge, anemometer ; the friction of air in mines and the elementary theory of splitting.

Safety lamps.—Theory of the safety lamp, Sir Humphrey Davy's Experiment ; the Davy lamp, the Clanny and Thomas and Williams lamps, the Marsaut and Mueseler lamps ; firedamp detectors.

PART II.

Mechanical Engineering of Collieries.—Winding engines, discussion of the different types, calculation of the dimensions of cylinders, length of stroke, diameter of drum, etc. ; strength of winding ropes and chains, detaching hooks, capping winding ropes, care and examination of ropes.

Table No. 5—*concld.*

Pumping.— Importance of a good system; measurement of quantities of water; lifting and forcing pump; pumps for sinking; temporary and permanent pumps; calculation of dimensions of pumps to perform a given duty, etc.; strength of pipes, methods of supporting; different types of joints.

Hauling.—Tramways, tubs and waggons; conveyance by self-acting inclines; single-rope haulage; main and tail; endless rope; endless chain; calculations concerning inclines, sizes of haulage engines, ropes, etc.; signalling; capping of haulage ropes.

Surface arrangements.—Boilers; Cornish, Lancashire, and water-tube types; boiler fittings, injectors, and steam-pipes, etc.; boiler explosions, incrustation, corrosion, and priming; calculations on boilers; Heap steads: arrangement of roads around pit bank; simple screening and sizing.

Transmission of power by steam, compressed air, and electricity; discussing the relative merits of each system.

Coke.—Its production and composition; different types of ovens; recovery of bye-products.

Table No. 6.

DEPARTMENT OF MINES IN INDIA.

Regulations made by the Board of Examiners under Rule 30 of the rules applying to coal-mines made under Section 20 of the Indian Mines Act, 1901, for the conduct of examinations for managers' certificates of competency.

(1) No member of the Board of Examiners shall act as a local examiner, except in emergent cases.

(2) When possible, one or more members of the Board of Examiners shall attend every examination on at least one of the days.

(3) So far as is practicable, the local examiners shall be :—

(*a*) An Inspector of Mines, who shall be Secretary to the local examiners.

(*b*) Two Mining Engineers or Colliery Managers who must be the holders of first class certificates. Provided that a Mining Professor may be appointed instead of one of the Mining Engineers or Managers.

(4) The remuneration of each local examiner shall be ₹150 for each examination, and a capitation fee of ₹2 for each first class candidate and ₹1 for each second class candidate examined, and travelling expenses and halting allowances on the first class scale under Civil Service Regulations; but an Inspector of Mines, acting as a local examiner, shall not be entitled to any fee or remuneration whatsoever, beyond the travelling expenses and halting allowances due to him in his official capacity.

(5) The subjects for examination shall be :—

(*a*) *Arithmetic and handwriting.*

(*b*) *Practical and theoretical coal-mining*, including surface and underground arrangements, sinking, timbering, ventilation, gases met with in coal mines, a knowledge of plans, surveying and levelling, and of the various instruments used in mining. Questions may also be asked upon geology, sanitation, hydraulics, explosives, safety lamps and similar subjects. The candidates may also be required to show how to arrange the ventilation and haulage of a mine on a given plan.

(*c*) *Practical mechanics*, including steam, steam-engines, steam-boilers, pumps and strength of materials; and questions may be asked upon electricity and compressed air as applied to coal-mining.

(*d*) *The Indian Mines Act, 1901*, and rules made under the Act.

(6) The examinations shall be both written and oral, and the subjects and conditions shall be the same for candidates for both classes of certificates; but the examination questions shall be made suitable for each class of certificate.

(7) The following shall be the maximum number of marks given for each subject :—

Subject.	First Class.			Second Class.		
	Papers.	*Vivâ voce.*	Total.	Papers.	*Vivâ voce.*	Total.
(*a*) Arthmetic and handwriting	50	...	50	50	...	50
(*b*) Mining	160	60	220	140	80	220
(*c*) Mechanics	110	40	150	100	50	150
(*d*) Indian Mines Act	60	20	80	50	30	80
Total .	380	120	500	340	160	500

APPENDIX III—*contd.*

Table No. 6—*concld.*

(8) No candidate who fails to obtain 66 per cent. of the total number of marks, or 33 per cent. in either of the subjects of Mining or Mechanics, shall be passed by the examiners, and if a candidate fails to obtain 33 per cent. of the marks given for either of the subjects of Arithmetic and Handwriting or the Indian Mines Act, any marks he may have obtained in such subjects shall not be included when the total is determined.

(9) Before each examination each candidate shall declare whether he presents himself for a first or second class certificate. No candidate for a second class certificate shall be eligible at that examination for a first class certificate, but a candidate for a first class certificate, who does not reach the necessary standard, may, nevertheless, at the discretion of the local examiners, be recommended to the Board of Examiners for a second class certificate, if, in their opinion, he has done sufficiently well to deserve it.

(10) The Secretary to the local examiners shall report, by registered post, the result of the examination, giving the number of marks obtained by each candidate in each subject, to the President of the Board of Examiners within one month of the close of the examination.

(11) The questions which the local examiners intend to put in the examination papers shall be submitted in draft to the Board of Examiners, for approval, at least six weeks before the date of the examination.

(12) At least one examination shall be held annually in the Bengal coalfields; and in other parts of India examinations will be held whenever, in the opinion of the Board of Examiners, the number of candidates in a coal-mining centre justifies the holding of an examination.

Table No. 7.

List of holders of certificates as Managers of Coal Mines in British India.

(*a*) Certificates granted to holders of foreign certificates of competency.

FIRST CLASS.

NAME.	No. of Indian certificate.	Date of Indian certificate.	No. of foreign certificate.	Date of foreign certificate.
Hutton-Williams, William . . .	135	1st February 1909 .	1376	3rd June 1898.
Wilson, Hugh	136	Ditto .	2682	6th September 1905.
Robinson, John	137	Ditto .	1817	27th February 1901.
Mackenzie, Allan Cameron . .	138	Ditto .	2643	5th June 1905.
Simmons, William	139	Ditto .	1541	16th June 1899.
Lascelles, Walter Reginald . . .	140	Ditto .	3209	29th June 1908.
Argyle, John Basil	141	Ditto .	3054	15th November 1907.
*Schreiber, F.	142	Ditto .	...	17th June 1904.
Greenwell, George Harold . . .	143	20th February 1909 .	2850	17th June 1906.
Stead, Alfred	144	17th August 1909 .	3260	3rd September 1908.
Riddle, John Blenkinsopp . . .	145	Ditto .	2765	27th February 1906.
Newton, Leonard	146	* Ditto .	1793	3rd January 1901.
Emmerson, Thomas	147	20th December 1909 .	2622	5th June 1905.

SECOND CLASS.

Stevenson, John	17	1st February 1909 .	6320	14th June 1907.
Mackenzie, John	18	20th February 1909 .	3494	23rd July 1898.

* Holder of a German Proficiency certificate.

APPENDIX III—*contd.*

Table No. 7—*contd.*

List of holders of certificates as Managers of Coal Mines in British India—*contd.*

(*b*) Certificates of Service.

FIRST CLASS.

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Lucas, Johannes Catchatoor . . .	132	17th August 1909.	
Forbes, Edward Neville	133	Ditto.	
Din, Ahmed	134	12th October 1909.	

SECOND CLASS.

Mookerjee, Naresh Chandra . . .	183	1st February 1909.	
Sen-Gupta, Kamakhya Charan . . .	184	Ditto.	
Roy, Gopal Chandra	185	17th August 1909.	
Das, Thakar	186	20th December 1909.	

(*c*) Certificates of Competency.

FIRST CLASS.

Castles, George Gordon	40	22nd March 1909.	
Rooke, Reginald George	41	Ditto.	
Malcolm, Robert Wright . . .	42	Ditto.	
Sarkar, Surendra Nath	43	Ditto.	
Bullock, James	44	Ditto.	
Nandi, Bhairab Charan	45	Ditto.	
Renaux, Harry Walter	46	20th December 1909.	
Devereux, Osmond Nicholas . . .	47	Ditto.	
Briggs, William Alexander . . .	48	Ditto.	
Dutta, Ashutosh	49	Ditto.	
Maughan, John Victor	50	Ditto.	
Chatterjee, Thakaram	51	Ditto.	
McInerney, Michael Edward . . .	52	Ditto.	
Bhar, Ananta Ram	53	Ditto.	

APPENDIX III—*contd.*

Table No. 7—*concld.*

List of holders of certificates as Managers of Coal Mines in British India—*concld.*

(*c*) Certificates of Competency—*concld.*

SECOND CLASS.

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Devereux, Osmond Nicholas	37	22nd March 1909.	
Chatterjee, Thakaram	38	Ditto.	
Sanyal, Satis Chandra	39	Ditto.	
Bhattacharjee, Guru Das	40	Ditto.	
Mitchell, Phillip Thomas	41	Ditto.	
Chakravarti, Karali Charan	42	Ditto.	
Wilkinson, Ronald	43	20th December 1909.	
Ashcroft, Charles Edwin	44	Ditto.	
Pandit, Prokas Chandra	45	Ditto.	
Milchem, Ernest Edgar	46	Ditto.	
Mitra, Atulsasi	47	Ditto.	
Bhattacharyya, Suratha Natha	48	Ditto.	
Mitchell, Lionel Patrick	49	Ditto.	
Bridgewater, George	50	Ditto.	
De Lanougerede, Percival Ernest	51	Ditto.	
Ghosh, Ram Sharan	52	Ditto.	

Table No. 8.

List of Universities and Colleges in England and India approved by the Governor General in Council for the purposes of Rules 32 and 33 of the Indian Mines Act, 1901.

Name of Institution and Degree or Diploma.	Date.
University of Birmingham in respect of its Degree of B.Sc. in Mining and Diploma in Mining.	11th June 1904.
University College of Bristol in respect of its Senior Diploma in Mining.	16th September 1904.
University of Cambridge in respect of its Diploma in Mining Engineering.	6th June 1905.

APPENDIX III—*contd.*

Table No. 8—*concld.*

List of Universities and Colleges in England and India approved by the Governor General in Council for the purposes of Rules 32 and 33 of the Indian Mines Act, 1901—*concld.*

Name of Institution and Degree or Diploma.	Date.
University of Durham in respect of its Degree of B.Sc. in Mining	21st December 1903.
Durham College of Science in respect of its Diploma in Mining .	29th June 1904.
University of Glasgow in respect of its Degree and Diploma in Mining.	28th September 1904.
Glasgow and West of Scotland Technical College in respect of its Diploma in Mining.	28th June 1904.
University of Leeds in respect of its Degree of B.Sc. in Mining and Diploma in Mining.	21st November 1904.
University of London in respect of its B.Sc. Degree in Mining for Internal Students, subject to the Degree being endorsed by the University with a certificate of four months' practical experience in a mine.	9th June 1905.
University of London in respect of its B.Sc. Degree in Mining for External Students, subject to the Degree being endorsed by the University with a certificate of four months' practical experience in a Mine.	7th August 1906.
Royal School of Mines in respect of its Associateship in Mining .	24th March 1904.
University of Oxford in respect of its Diploma B. (for Colliery Engineers) in Scientific Engineering and Mining Subjects.	11th February 1905.
University College of Sheffield in respect of its Diploma in Mining.	15th July 1904.
University College of South Wales and Monmouthshire in respect of its Diploma in Mining.	19th April 1904.
Wigan Mining and Technical College in respect of its Diploma in Mining.	26th August 1904.
Civil Engineering College, Sibpur, in respect of its Diploma in Mining.	22nd February 1907.
Merchant Venturers' Technical College, Bristol, in respect of its Diploma in Mining Engineering.	5th October 1905.
Victoria University of Manchester in respect of its Degree and Certificate of Mining.	14th February 1906.
University College of Nottingham in respect of its Diploma in Mining Engineering.	28th March 1906.
University of Sheffield in respect of its Degree of Bachelor of Engineering. (Mining).	30th June 1906.
Heriot-Watt College in respect of its Certificate in Mining Engineering.	16th January 1908.

APPENDIX III.

Table No. 9.

List of Inspection Circles.

No. 1 Circle.	No. 2 Circle.	No. 3 Circle.
(*a*) All mines in the districts of Palamau, Gaya, Monghyr, Singhbhum, Darjeeling, Ranchi and Sambalpur, and all mines other than coal mines in the district of Hazaribagh, and all mines in the district of Manbhum, which are situated west of a line drawn from Adra Junction at mile 175 of the Bengal Nagpur Railway to Gobindpur at mile 169 on the Grand Trunk Road and continued across the district in each direction.	(*a*) All mines in the districts of Burdwan and Bankura to the west of a line drawn from mile 131 on the East Indian Railway main line near Asansol to mile 141 on the Ondal Loop near Gaurangdi, and continued across the districts in each direction; and all mines in the district of Manbhum east of a line drawn from Adra Junction at mile 175 on the Bengal-Nagpur Railway to Gobindpur at mile 169 on the Grand Trunk Road, and continued in each direction across the district, and all coal mines in the district of Hazaribagh.	(*a*) All mines in the districts of Burdwan and Bankura to the east of a line drawn from mile 131 on the East Indian Railway main line near Asansol to mile 141 on the Ondal Loop near Gaurangdi, and continued across the districts in each direction, and all mines in the districts of the Sonthal Parganas and Birbhum.
(*b*) All mines in Assam.	(*b*) All mines in Baluchistan.	(*b*) All mines in the Presidency of Bombay.
(*c*) All mines in Burma.	(*c*) All mines in the United Provinces.	(*c*) All mines in the Central Provinces.
	(*d*) All mines in the Panjab.	(*e*) All mines in the Presidency of Madras.
	(*e*) All mines in Ajmer-Merwara.	

The undermentioned Report, Rules and Forms can be obtained from the :—

Office of the Chief Inspector of Mines in India,
Dhanbaid, E. I. R.

ANNUAL REPORT OF THE CHIEF INSPECTOR OF MINES, INDIA.

ALL RULES FRAMED UNDER SECTION 20 OF THE INDIAN MINES ACT, 1901, IN SHEET FORM.

DRAFT CODE OF SPECIAL RULES FOR COAL MINES IN ENGLISH AND HINDI.

FORMS USED IN ESTABLISHING SPECIAL RULES.

Messrs. Thacker, Spink & Company, Calcutta.

FORM No. 5. APPLICATION FOR PERMISSION TO MANAGE MORE THAN ONE MINE.

FORM No. 18. NOTICE OF APPOINTMENT OF MANAGER.

FORM No. 20. NOTICE OF ACCIDENT.

FORM No. 24. ANNUAL RETURNS.

FORM No. 26. NOTICE OF OPENING A MINE.

CALCUTTA
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8, HASTINGS STREET

Department of Mines, India.

REPORT

OF THE

CHIEF INSPECTOR OF MINES IN INDIA

Under the Indian Mines Act (VIII of 1901)

FOR THE

YEAR ENDING 31st DECEMBER 1910

BY

G. F. ADAMS,

Chief Inspector of Mines in India

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1911

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FROM

G. F. ADAMS, ESQ.,
Chief Inspector of Mines in India,

TO

THE SECRETARY TO THE GOVERNMENT OF INDIA,
DEPARTMENT OF COMMERCE AND INDUSTRY.

Dated Dhanbaid, 12th June 1911.

SIR,

I have the honour to submit the report upon the inspection of mines in British India for the year ending 31st December 1910.

EXPLANATORY INTRODUCTION.

It is necessary to explain that this is a report relating entirely to the administration of the Indian Mines Act, 1901, and is not a complete statistical review of Indian Mining and analogous industries.

No official publication embodying such statistics is at present issued for India. A Quinquennial Review of the mineral production of India during the years 1904 to 1908 was published during the year, being Volume XXXIX of the Records of the Geological Survey of India. Figures for Mysore, where most of the Indian gold is raised, are given in the report of the Chief Inspector of that Native State, and mineral statistics may also be found in the administrative reports of the various Presidencies, Provinces and States of India.

It should be remembered in reading the statistics that there must be a considerable output from quarries which are under 20 feet deep; and owing to the exclusion of such places from the scope of the Mines Act these figures should not be regarded as a complete index to the production of the mineral wealth of the country.

The report is divided into five sections, *viz.* :—

Section I.—Persons employed.
„ II.—Output of mineral.
„ III.—Accidents.
„ IV.—Prosecutions and additions to the Act.
„ V.—General Remarks.

Section I.—Persons employed.

During the year 1910 the average number of persons working in and about the mines regulated by the Indian Mines Act, was 144,680 of whom 89,778 worked underground and 54,902 on the surface; 91,713 of the persons were adult males, 47,963 adult females and 5,004 children under 12 years of age. This is an increase of 3,970 workers or 2·7 per cent. as compared with the number of workers in 1909. This increase was in the numbers of those working in mines other than coal mines, for the persons employed in coal mines decreased in number by 4,006.

There appears to have been little or no recovery, as far as mines other than coal mines are concerned, from the depressed conditions set forth in the last Annual Report. These matters are alluded to more fully in the next section.

The district reports show that the mineral industry of India in 1910 remained in a subdued condition. No extreme shortage of labour was reported from any district. For working the manganese mines in the Nagpur district of the Central Provinces local labour was not sufficiently available and labour had to be imported at a higher cost. Wages of miners ruled high throughout Burma, and an increase of wages is also reported in some of the mica splitting factories in the Hazaribagh district of Bengal.

Section II.—Output of mineral.

COAL.

There was a slight increase in the output, which was 11,387,716 tons, and which, compared with 11,294,227 tons raised in 1909, is an increase of 0·83 per cent. In 1909 there was a decrease of 7 per cent.

Of the total 10,777,306, tons or 94·64 per cent. were raised in Bengal. This ratio is practically the same as in the previous year. As far as this Province is concerned the coalfields which contributed to the increase were Raniganj and the smaller coalfields with increases of 4·4 and 0·29 per cent. There were decreases of 0·65 and 0·33 per cent. in the Jharia and Giridih coalfields.

In the Central Provinces and Assam there have been decreases of 7·4 and 2·8 per cent., while increases of 32·2 and 7·8 per cent. have to be recorded from the Panjab and Baluchistan. In the last Province the percentage has been arrived at without taking into account the output of some small non-Act mines, which were included in previous reports but which are omitted now and will be omitted in future. The increase in the Panjab appears to be of a temporary character.

The coal trade during the year was still in the trough of the wave, but owing to the closing down of unprofitable mines, there was not such a large accumulation of stocks as in the previous year, and the trade was brought more into line with the change from the abnormal conditions existing in 1908.

MICA.

The output was 21,375 cwts., compared with 32,011 cwts. in 1909. This is a decrease of 10,636 cwts. or 33 per cent., a decrease of 30 per cent. having been reported last year.

The decrease was general throughout the fields, and applied more to slab mica than to splittings, for the amount of the former commodity received in London appears to have been considerably less than in former years, while the trade in splittings appears to have slightly improved.

Those who have long experience of the mica trade agree that in so far as splittings can be used in the place of stained slab mica for electrical purposes the use of them must have an adverse effect on the value of such mica as is usable for the same purpose. Clear and slightly stained slab mica however does not appear to be affected one way or the other by the trade in splittings.

The London market generally continued to be as dull as in the previous two years. There was a slight improvement in prices in the autumn.

MANGANESE ORE.

The output of manganese ore was 468,669 tons as compared with 357,205 tons in 1909, making an increase of 111,464 tons, or 31·2 per cent., the first to be recorded since 1907. There was however no material change in the prospects of the industry. The market continued in a depressed condition and the price per unit of ore

was practically unchanged, averaging just under nine pence. Only the larger companies have been able to continue operations and there was no sign of any pronounced improvement in trade during the year.

GEMS.

There was a slight decrease in the output of gems, the output being 262,032 carats, while the previous year's output was 265,010 carats. The output is almost entirely from the ruby mines in Burma but a small quantity of diamonds was obtained during 1910 from a mine in the Koornool district of Madras. This however was closed down towards the end of the year, and its output may be disregarded. Red rubies are not in such request as they used to be in Europe and there was a continuous slump in the market throughout the year.

GOLD.

Another decrease has to be recorded in gold, the figures being 3,269 oz. in 1910 and 5,615 oz. in 1909. It is with great regret that I have to record that after working for ten years, spending at least half a million pounds and attaining a greatest depth of 1,260 feet, measured on the inclination of the reef, the various companies in the Dharwar gold field have decided to abandon their enterprises and all underground work ceased towards the end of the year. In all ten distinct companies have carried out mining operations on different blocks. In nearly every case the reef for the first few levels gave encouraging results, and in some instances high values, but as further depth was attained the values decreased. The last two levels driven in the deepest mine gave better results than had been obtained for some time. At the present time the mill tailings at this mine are being concentrated and then treated by the cyanide process with agitation, previous efforts to treat them by the ordinary cyanide process having proved unsuccessful. This work should be completed during this year.

Hopes are entertained of better prospects in the Anantapur district of Madras. The venture is still in the prospecting stage but one company has reached a depth of 573 feet and has ten stamps at work. Prospecting is going on over a length of seven miles to the south of this. At the southern end a depth of 480 feet has been reached and payable ground is being opened up at that depth.

OTHER MINERALS.

There were increases in limestone, iron, magnesite, copper, Jabalpur clay, galena and graphite, and decreases in salt, slate, wolframite, chromite, Fuller's earth, tin, steatite and bauxite. There is nothing to call for special comment as regards the present condition of the trade in any of these minerals as far as India is concerned.

Section III.—Accidents.

GENERAL REMARKS.

During the year 1910 at mines regulated by the Indian Mines Act, 1901, there were 117 fatal accidents, being a decrease of 9 as compared with the number in 1909, and a decrease of 5 as compared with the average number in the preceding three years.

These accidents involved the loss of 186 lives. This is an increase of 34 upon the number of deaths in 1909. Fifty-five however were the result of 5 accidents, leaving 131 to be accounted for by the remaining 112.

The death rate per thousand persons employed was 1·29, the average of the preceding three years being 1·03. At coal mines only these figures were 1·52 and 1·12, and at mines other than coal ·66 and ·77.

At coal mines only the death rate per million tons raised was 14·05, the average of the preceding three years being 10·98.

Of the persons killed 155 were males and 31 were females.

The deaths occurring in each mineral worked were as follows :—

160 in coal ; 5 in mica ; 17 in manganese ; 1 in salt, 1 in gems and 2 in gold.

27 persons lost their lives by explosions of firedamp ; 84 by falls of roof and sides ; 20 in shafts ; 8 by explosives ; 6 by irruption of water ; 16 by haulage ; 9 by other accidents underground, and 16 on the surface.

A list of these accidents appears in Appendix II, Table I. In addition to them there were 27 others causing the death of 30 persons. These also appear in Appendix II, Table I, but are listed separately, a reason being given in each case for their exclusion from the statistical tables.

Seventy-one per cent. of the statistical accidents occurred in the Bengal coal mines. In reviewing them generally, and also those which were serious but not fatal, there is evidence that in many cases the cause, in some instances direct and in others indirect, was want of supervision. Reference is here made not so much to personal supervision by the manager, though in many cases that should be more frequently exercised, as to supervision by an adequate and efficient staff of subordinate officials. It is enacted by rule 4 of the rules for the working of coal mines that a competent person shall examine every part of the mine where persons have to work or pass once in every twenty-four hours. This relates to examination of the physical conditions of the mine. But it is not sufficient for the prevention of many kinds of accidents relating directly to such physical conditions, and it is certainly not sufficient for the prevention of accidents arising from the vagaries of the Indian miner, a much more common cause.

There is a steady advance in the operation of goafing or the systematic getting of pillars. This is correct and proper mining, but specific accidents appertain to it, and these are more numerous than they would be if larger pillars were left in the first working. The old system, still in vogue to a certain extent, consisted of making the galleries as wide and the pillars as small as would just keep the mine from caving in—the idea of recovering these pillars was never entertained—and there has been a gradual evolution to the best practice, confined at present to the best managed mines, of driving narrow galleries and leaving substantial pillars. The benefits to be derived from this practice, which in Bengal is essentially modern, will be reaped in the future but meanwhile the work of getting such pillars as have been formed on a somewhat larger scale than as described but still on too small a scale for the achievement of the best results is being attempted. Not only does the getting of these comparatively small pillars with wide galleries involve risk, but from time to time there occur heavy breakdowns, the getting of a certain number of pillars bringing about a collapse, owing to the altered strain on the roof, over an area of pillars still standing, the getting of which such collapse for ever precludes. It is in order to show how, apart from the question of danger, loss results to mine owners, and incidentally to the country, in this way, that I attach to this report a plan, plan F, of a mine in Bengal, where recently the getting of pillars over an area of 28 bighas has resulted in a sudden collapse over an unrecovered area of 18 bighas. It is doubtful whether many, if any, more pillars will be recovered from this mine.

In many cases, probably the majority of cases, there has been considerable shrinkage in the size of the pillars and consequent enlargement of the size of the galleries owing to the prolonged period which has elapsed since they were first formed, a period during which natural weathering and surreptitious pillar robbing have brought about their results, including as they do disintegration and consequent deterioration of the coal left in the pillars. There are however signs that safer and in the long run more economical methods of working are receiving the consideration of mine owners and managers.

Each fatal accident is briefly described in Appendix II, Table I, but the following are reported on at greater length. The numbers refer to the numbers in the Appendix.

EXPLOSIONS OF GAS.

No. 1. Equitable Coal Company's Dishargarh coal mine, Nos. 1 and 3 shafts.

Up to now there has been an almost universally prevalent idea that Bengal coal mines are immune from explosions of firedamp except on a minute scale. This idea however must now be definitely abandoned in view of the serious explosion which occurred at this mine in February of last year. Eleven persons lost their lives, and the death roll might easily have been greater than it was.

Before detailing the circumstances attending the explosion itself a brief description of the underground workings and general scheme of ventilation must be given.

The principal seam worked from these shafts is the Sanctoria seam, which has been extensively worked for many years, the workings extending from the shafts 3,000 feet to the south, 1,000 feet to the west and 400 feet to the east. About two years before the explosion the Hatnol seam, which lies 106 feet above the Sanctoria seam, was won by a landing in No. 3 shaft and by a stone drift from the Sanctoria seam.

The workings in the Hatnol seam and the portion of the workings in the Sanctoria seam in the neighbourhood of the shafts are shown on Plan A, and the condition of the workings in the Hatnol seam after the explosion is shown on Plan B.

It will be seen from the plans that the workings in the Hatnol seam consisted of a dip gallery driven down from No. 3 shaft landing, a level driven a short way east, a level joining the dip gallery with the top of the stone drift, a very short rise gallery in continuation of the drift, and a level which had been driven west for a distance of 76 feet. The coal was despatched in tubs down the drift by a self-acting incline, the drum being in the rise gallery. At the bottom of the drift the tubs were pushed by hand along the main shaft level in the Sanctoria seam to No. 3 shaft.

No. 3 shaft was the downcast and No. 1 shaft the upcast, the ventilation of the mine being effected by the heat of the exhaust steam from one pump, two hauling engines and the pipes conveying steam to them. The ventilation of the Sanctoria seam—the main ventilation of the mine—passed the landing in No. 3 shaft to the shaft bottom, thence down the main dip of the Sanctoria seam, round the workings and back to No. 1 shaft. The ventilation of the Hatnol seam split from the main ventilation at the landing in the shaft, passed down the dip gallery and left the seam by the drift. Where the drift takes off the main shaft level in the Sanctoria seam the air joined a small split coming west from No. 3 shaft, scaling through openings left for the purpose at the top of the doors D 1 and D 2. After joining the two splits proceeded to No. 1 shaft, partly over similar openings over the doors D 3, D 4 and D 5, and partly through a hole in the stopping in the first old rise gallery west of the drift and through the pump chamber. The three splits were therefore dependable upon each other and a short-circuiting in one would affect adversely the other two.

Gas has been found from time to time in both seams. The Sanctoria seam was being worked with naked lights, with the exception that safety lamps were occasionally used when driving forward narrow places, but safety lamps were exclusively used in the Hatnol seam.

The management have stated that the amount of air passing through the Hatnol seam averaged 10,000 cubic feet per minute.

Thirty-four days before the explosion the manager found gas in the west level in the Hatnol seam, and withdrew the men from the level. He caused a hand fan and pipes to be placed there about that date, but the use of the fan was abandoned after it had been worked for two days and from that time on no effective attempt was made to remove completely the gas from the west level, in other words to ventilate it and keep it ventilated.

Ten days before the explosion the agent inspected these workings. He found the gas fairly strong about half-way in the level and also hanging about the roof at the top of the drift. He gave orders for hurdle sheets to be erected to keep the drift clear, these being brattice sheets stretched across the gallery and a certain

height up in order to throw the air up to the roof. These sheets would not affect the west level.

Four days before the explosion the manager found gas in the west level at a distance of forty feet in. The level therefore, both on that day and the day on which the agent inspected, contained gas—strictly speaking an inflammable mixture of gas and air—for a distance of 36 feet back from the face, an accumulation of about 900 cubic feet. He has stated that he then told the assistant to get up brattice and clear out the gas at the Sunday stoppage. He did not specify how it was to be done. The gas was not cleared out on the Sunday, a fact of which the manager was quite aware. All that was done was that on the Sunday, which was the day before the explosion, the European assistant took down brattice cloth and erected it at the mouth of the west level with a view of forcing the air into the mouth of the level. He stated that it extended 15 feet into the level.

He visited the Hatnol seam again about noon the next day.

At about ten o'clock that night, while ten miners were at work in the Hatnol seam, an explosion occurred. From the position of the bodies and from the medical evidence the ten men must have been killed instantaneously. Signs of considerable violence were found on the drift. Timber was scattered in all directions. Three empty iron tubs standing at the top of the drift were damaged beyond repair, the end of one was blown in one direction and a side was blown in the opposite direction. The haulage drum supports of 8″ square timber were broken and the 8″×4″ steel roof girders were bent. One of the hauling ropes was torn off the drum and the three tubs at the bottom of the drift which were attached to the rope were blown across the Sanctoria main level. The hand fan was blown six feet from the air pipes laid in the west level. The doors D 1 and D 2 and the brick pillars at the sides of them were blown towards No. 3 shaft, door D 3 with its masonry support was blown towards No. 1 shaft, door D 4 was blown in the same direction and door D 5 was intact.

In the Sanctoria seam the men at No. 3 shaft bottom, who were engaged in putting the tubs from both seams into the cages, were uninjured, but shortly after the explosion they heard a voice on the Sanctoria level and they found an injured man named Shambu Bauri between the shaft and the door D 1. He was taken to the surface and died at 9 A.M., next day, but at 4 A.M. he informed Mr. Leach, the Inspector of Mines for the Circle, to whom the manager had sent news of the accident, that he was a pump khalassi in the Sanctoria seam, that he had passed the bottom of No. 1 shaft and was proceeding along the level towards No. 3 shaft with an open light in his hand and when he had reached the door next to No. 3 shaft he saw flame and heard a rumbling noise. According to the medical evidence this man was in a rational state at the time he made the statement but not capable of much mental effort.

Mr. Leach at about 4-30 A.M. found gas at the mouth of the west level and at the inbye side of the west level towards the haulage drum and faint signs of gas at the junction of the four galleries.

It is impossible to say with certainty what actually caused this explosion. All the lamps in the Hatnol seam were intact with the exception of one, No. 66. This lamp was found in the position indicated on Plan B, the bonnet having been wrenched off the vessel, and the glass missing. Fragments of the glass were found in a ledge, also marked on the plan, in the side of the gallery, showing plainly where the lamp had been placed before the explosion. It has been suggested that the gas came out of the level as far back as this lamp, that it burnt inside the lamp until the gauzes got red hot and that the gas outside the lamp was then fired. There was a mark caused by heating on the top of the outer gauze but it was of a kind that is often seen on gauzes that have been exposed to a high oil flame. The gauzes were in good condition. To support this theory the gas would have had to come back past the brattice sheet at the mouth of the level against the air current, which is unlikely in the extreme. Moreover if the lamp had communicated flame to the outer air in this way, there would have been no reason for it to have been shattered in the way it was. The cubic contents of the inside of a lamp are too small for an explosion of that amount of inflammable mixture to have had such rending power. Mr. James Ashworth, the well-known authority on safety lamps has stated "It is absolutely impossible to dismember any safety lamp by an explosion of gas within the lamp." Another suggestion, that this lamp was

shattered by being struck by the end of the incline rope, a steel wire rope 1″ in diameter, is probably correct. For this rope was jerked off the drum by the force with which the three empty tubs attached to it standing at the bottom of the drift were impelled and it is quite conceivable that in its travel the end of the rope might whip the lamp off the ledge.

It is also to be noted that as far as experts have been able to decide by recent experiments it is impossible for a double gauze Marsaut lamp, as this was, to fire gas by means of the gauze in a still atmosphere in which lamp No. 66 undoubtedly was. These lamps have been successfully tested in inflammable mixtures of high velocities, and since this explosion Mr. G. C. Leach, the Inspector of Mines and Mr. J. R. R. Wilson, who was Chief Inspector of Mines when the explosion occurred, have carried out experiments, the former at the Civil Engineering College at Sibpur, and the latter in England, and both have failed after severe tests to ignite gas through the gauzes of a double gauze Marsaut lamp in a still atmosphere.

The most natural theory is that the gas was ignited by the naked light carried by Shambu Bauri. It is probable that such bratticing as the European assistant did put up the day before the explosion disturbed the equilibrium in the west level and that gas was diffusing from it in increased quantity unnoticed on the day of the explosion. As has been stated Mr. Leach found it coming out of the west level six hours after the explosion. It is also possible that either by accidental short-circuiting of the air in the main split in the Sanctoria seam, or, more probably, by the men who handled the tubs on No. 3 shaft level leaving the doors D 1 and D·2 open, the ventilation in the drift was less than usual and less able to dilute gas which would then gradually make its way down the drift to the level and flow towards No. 1 shaft. It would be ignited by Shambu Bauri somewhere between the bottom of the drift and No. 1 shaft, probably quite close to the bottom of the drift. The ignited gas would burn up the drift until it met the large quantity of gas up in the Hatnol seam when a violent explosion would accrue at the top of the drift.

In order to account for the presence of Shambu Bauri at the place where he was found, it is necessary to assume that after the explosion he walked from near the bottom of the drift where he first ignited the gas to where he was found. It was quite possible for him to have done so. Having regard to the condition he was in when he made his statement to Mr. Leach it cannot be considered certain that he had reached the door next to No. 3 shaft before anything happened.

After the explosion a brattice sheet was erected longitudinally up the west level to the face of it. The work took less than a day and cost Rs. 75. The gas was cleared out in a few hours and has not been detected since.

There are few accidents in mines which do not inculcate useful lessons, and it is to be hoped that managers will realise from this fatality the risk run by leaving a volume of gas standing for several days, with a chance of its coming in contact with a naked light, should any derangement of the ventilation or increased feed cause it to move out into the air current. There is risk even with the exclusive use of safety lamps. The safety lamp is the most perfect instrument at present at our disposal as a practical safeguard against explosions of firedamp in mines, but the human element enters largely into its comparative safety both as regards the putting of it together after cleaning and the use of it underground. An Indian miner may not understand that the breaking of a lamp glass or the propping open of a ventilation door or sheet may have the most serious consequences, and hence the exercise of vigilance and the taking of every precaution is all the more necessary in this country.

Apart from all other steps which might have been taken, it is probable that if an inspection of the Hatnol seam workings had been made by a subordinate official early in the evening on which the explosion occurred, it could have been averted.

The responsibility of the manager in this case has been made the subject of an inquiry under Section 18 of the Indian Mines Act and subsequently under Rule 44, made under Section 20 of the Act. In view of certain elements of doubt attending the circumstances of the case, the Government of Bengal accepted the recommendation of the officer appointed under that rule and decided that the manager's certificate should not be suspended.

No. 2. Saltore Coal Company's Saltore coal mine.

The No. 2 shaft at this mine had reached the Dishargarh seam, which is 16 feet thick, at a depth of 540 feet. No connection had been made to any other shaft but two level galleries had been driven near the bottom of the seam, one going west for 112 feet, and one going east for 166 feet. Seventeen feet away from the shaft on the west side a rise gallery had been driven up for 25 feet and 16 feet from the shaft on the east side a similar gallery had been driven up for 35 feet.

Safety lamps had been used when driving all these galleries. It was stated that no gas had been seen, but that owing to trouble with water and lack of ventilation, the driving of them had been stopped two months before the explosion and that the only persons who had been employed underground since had been engaged in fitting up a new pump in the west level close to the shaft. These men were allowed to use open acetylene lights.

Fences had been erected on the west side at the mouth of the rise gallery and at a point about thirty feet further inbye on the west level, but no daily inspection was made of the mine beyond the pump. A good current of air was forced down the shaft by a Sirocco fan through a column of air pipes 18 inches in diameter, but as the end of the column stopped in the shaft 13 feet above the roof of the west level, there was no circulation of air in the galleries.

At the time of the explosion a European foreman sinker, with a head fitter, another fitter, and three coolies were at work at the pump. They had two acetylene lights, both of which were near the pump. At about 9-45 A.M. an explosion occurred. The foreman sinker and four men ran to the shaft and jumped into the water in the sump. The head fitter came out afterwards but did not jump into the water. He died six hours after. The foreman sinker, the other fitter and one cooly were severely, and the other two coolies were slightly, burnt. The morning after the explosion Mr. R. R. Simpson, the Inspector in charge of the Circle, found, in the west level, 45 feet from the shaft and outbye of the fence, a gas cap in the safety lamp $1\frac{1}{2}$ inches in height, and in the west rise gallery a cap $\frac{1}{2}$ inch in height.

It is evident that after the driving of the galleries was stopped, gas slowly accumulated in the west level until it extended as far out as the pump, where it exploded at one of the acetylene lights.

The explosion would not have occurred if proper daily inspection with a safety lamp had been made of these galleries. The fact that work was confined to the pump may have legally absolved the manager from having a daily inspection, as required by rule 4, made at any point inbye. The Dishargarh seam however is known to contain gas, and in this seam, in a virgin field such as Saltore, more than ordinary precautions should have been taken. In view of the fact that naked lights were used and no inspection was made at least once a day with a safety lamp, it cannot be said that any precautions were taken at all.

No. 3. Ghusik and Muslia Collieries' Muslia coal mine.

A shaft had been sunk 320 feet to the Ghusik seam. It had not been connected to any other shaft and an attempt had been made to ventilate it temporarily by means of a length of 12 inch air pipes in the shaft and a wind cowl. This arrangement had proved inadequate to deal with the large quantity of gas met with in driving short galleries in four directions from the bottom of the shaft. At times it was possible to detect gas in the safety lamp at the top of the shaft, and, owing to the danger of igniting this gas on the surface, fires and lights had been prohibited near the shaft and night work on the surface had been stopped for some months.

No work had been done in the galleries for some weeks previous to the explosion and no one was underground when it occurred.

It had been arranged to replace the wind cowl by a fan, worked by a steam engine, and these had been erected but the fan had not been coupled to the range of air pipes in the shaft.

While two masons and a bucket man were at the top of the shaft engaged in connecting the pipes to the fan by means of brickwork, one of them, wishing to

smoke, put his head and shoulders into the end of the air pipe and struck a match in it. Immediately a considerable flame issued from the mouth of the pipe and all three men were severely burnt. They at once left the spot and had time to go a distance of one hundred feet before there was a loud report, audible more than a mile away, and a large volume of flame issued from the shaft with explosive violence. The damage done at the top of the shaft was considerable. The headgear was lifted bodily to a height of eight inches and debris was scattered to a distance of four hundred feet away.

The range of air pipes which reached down in the shaft to four feet above the roof of the galleries was evidently upcasting and when gas was ignited at the top of the range, the flame travelled down the pipes to the bottom of the shaft where it must have come in contact with a large volume of gas, causing a violent explosion.

The bucket man succumbed to his injuries on the following day.

Three hours before the explosion three men had been employed for about an hour and a half in the bucket in the shaft close to the bottom, attending to the air pipes, and they were again down for a few minutes a quarter of an hour before the explosion. They had no light but worked in daylight penetrating down the shaft. They felt no inconvenience in breathing, although they must have been in an explosive atmosphere. This is not at variance with general experience in such cases.

The whole range of air pipes collapsed inwards and flattened out as the result of the partial vacuum due to the condensation of the steam in the afterdamp and the rapid cooling of the gases which had been burnt within them.

After the explosion the water which was allowed to rise in the shaft was in a state of violent ebullition, which proved that a large quantity of gas was being given off in the galleries.

This accident, the circumstances attending which were most unusual, was due to the imprudence and disobedience of the workman who struck the match. One of the workmen admitted they had been told not to smoke.

The fan has since been connected and set to work, but as even since then considerable trouble has been experienced in ventilating the mine while the necessary connection with another shaft is being made underground, it might be remarked that when a shaft and galleries have to be temporarily ventilated in this way, a suction fan, by means of which any gas met with is drawn into the pipes and carried direct to the fan, is a better expedient than a blowing fan which, blowing the air down the pipes, forces the gas to the surface through the galleries and the shaft, where persons have to work and travel.

No. 4. Assam Railways and Trading Company's Namdang coal mine.

This accident consisted of a series of four explosions which occurred over a period of ten hours.

The mine is worked on the principle of driving main ways for a certain distance and then working the coal back in a series of chambers. As soon as a chamber is finished it is dammed off, the present workings being separated by the dams from the old workings or "deads" in which fire is always more or less present.

The coal is 106 feet thick, with several partings. The main seams worked are known as top coal (27 feet thick), middle coal (16 feet thick) and bottom coal (32 feet thick).

There are three districts in the mine and the accident occurred in the bottom coal seam in No. 1 district which is the district outbye of the other two.

The workings of this district are shown on Plan C. The seams dip at an angle of 56 degrees, so that, with the exception of cross measure roads, all roads in a north-west and south-east direction are highly inclined, the roads at right angles to them being practically level.

All dams shown in red upon the plan have been built since the accident with the exception that the new dam at A in the rise workings was being built when the first explosion occurred and those at D and E in the next levels below were being built when the fourth explosion occurred.

On the morning of the 26th November, the assistant foreman of No. 1 district noticed "firestink" in the main return airway. On proceeding further into the mine he noticed the old dam at A smoking. He had it plastered and sent for the manager who at 11 o'clock in the day instructed him to build another dam 5 feet away from the first and fill up the intervening space with sand.

At about 2 P.M. the manager who had gone out of the mine received a verbal message from the assistant foreman stating that the smoke had been stopped and that the work was progressing satisfactorily. The manager then left for Margherita about three miles away, where his superiors, the agent and general manager and the colliery superintendent, reside.

At about 2 P.M. an explosion occurred in the deads behind the dam. There was it appears a loud report, both the old and the new dams were blown out and a sirdar was slightly burnt.

The assistant foreman sent a written report of this occurrence to the manager who received it at Margherita at about half-past five. The assistant foreman however did not state in this report that any one had been burnt. He merely stated there had been a blast, that the smoke was coming out again dense and hot and that he was about to erect brattice (for ventilation).

After sending the report the assistant foreman returned to the vicinity of the dam and about an hour after the first explosion a second occurred, and he and ten coolies were burnt. The former has recovered, after being many weeks in hospital, but five of the coolies, who were all taken to hospital, have died.

As these men were retreating an hour afterwards a third explosion occurred. They were far enough away for the effects to be restricted to a rush of wind from behind them.

When the manager received the report of the first explosion he went straight back to the mine taking with him two other assistant foremen. On arrival he was told that the assistant foreman of No. 1 district and several other coolies had been burnt. He went to the hospital and saw the latter but without seeing the former who had gone to his bungalow, a little way off, he rushed into the mine with the two other assistant foremen and several more coolies. They all proceeded to the vicinity of the dam and again proceeded to restore the ventilation by building dams at D and E. Just before midnight a fourth explosion occurred burning one of the assistant foremen and twelve coolies. The former and eight of the latter have died in hospital. Three coolies close to dam E were uninjured.

The total death roll was therefore one European and thirteen coolies.

The manager then retreated with his men and proceeded to dam off the whole district at F. He sent for his superiors, who arrived at 2 A.M., and strong dams were erected at F, K, L, and M to completely isolate the whole district.

This was the condition when I arrived at the mine and after consultation it was arranged to still further strengthen these four dams with others at P, Q, R, S, and T on the outbye side of them.

These fatalities could have been prevented if prudence and caution had been exercised, and if it had been realised by the assistant foreman, who holds a first class certificate, that after the first explosion had occurred the occurrence of another was quite possible, and if therefore, after the first explosion he had withdrawn his men to a place of safety and had there commenced to dam off this portion of the mine. In reviewing his responsibility it must also be noted that it is a general instruction that each European assistant foreman shall inspect his dams every day, as, long before actual smoke comes through, black damp can be detected in the safety lamp. In this case he admitted that he had not seen the dam at A since the 23rd November as he had fever. He did not inform the manager on the intervening days that he was unable to see this dam.

The question of carrying on the necessary operations in a place of safety applies equally, if not with more force, to the manager. He stated that when he entered the mine he did not realise that there had been more than one explosion, the one reported to him in writing. This report did not state that anyone had been burnt. He saw however in the hospital the coolies who had been burnt and he was informed that the assistant foreman had been burnt also, and he might have realised that the report could not have been written by a man who had been burnt. If he had gone from the hospital to the assistant foreman's bungalow,

and had seen how badly this man had been burnt, his subsequent movements and plans would probably have been very different from what they were. Over and over again it has been pointed out in reports on serious accidents how additional lives have been sacrificed by blindly rushing underground without proper consultation and full knowledge of all the facts.

There was no breach of any regulation of the Indian Mines Act.

The manager is the holder of a second class certificate under the English Coal Mines Regulation Act and he was managing this mine under a temporary authorization granted by the Chief Inspector of Mines in India under Rule 49 made under Section 20 of the Indian Mines Act. This authorization has been withdrawn.

In regard to the immediate cause of these explosions either explosive gas was ignited by fire in the old workings, or else heavy falls drove the flame out.

There have been two similar occurrences in India. On page 13 of the Report of the Chief Inspector of Mines in India for 1907 an underground fire at Messrs. Apcar and Company's Charanpur coal mine, and on page 4 of the Report for 1909 an accident, classed as an explosion for reasons stated, at the Assam Railways and Trading Company's Tikak coal mine, adjoining Namdang, were reported.

In the last case it was pointed out that gas had never been seen in the mine and that naked lights only were used, that it was very unlikely that generated carbon monoxide reached the explosive point and became ignited, and that the explanation was probably the simpler one that a heavy fall took place in the burning goaf.

In the first case it is stated that "a heavy fall took place and the air blast demolished the scaffolds." This occurrence was afterwards discussed by the members of the Mining and Geological Institute of India, Messrs. W. H. Pickering and R. R. Simpson, who were both actively engaged in combating the fire, having contributed a paper on the circumstances attending it. The authors inclined to the theory that there was no explosion and that the air blast was caused by a heavy fall of roof or coal in the fire area. This theory was not universally held at the time of the discussion and since then, the fire having been put out, Mr. Simpson has been able to make an inspection in a portion of the actual area. He found that no extensive fall had taken place, and now holds that the occurrence was an explosion. As at Tikak, no gas has ever been seen at Charanpur, and the shallowness of the workings precluded the probability of any ever being seen, but the fact that the theory of explosion is now forced on us in the Charanpur case leads me to believe now that both at Tikak and Namdang actual explosions took place, and that, although in most of the coal seams in India, firedamp may not be detected in ordinary working circumstances, yet when these seams are on fire explosions of gas, the exact composition of which cannot be ascertained, are liable to occur. Every care therefore should be taken when dealing with such cases.

There are two other reasons which support the theory that the occurrences at Namdang were explosions of gas. Eighteen days afterwards an undoubted explosion of gas took place at a dam in Tikak mine, the gas being ignited by a naked light. One European and five coolies were slightly burnt. As before stated, Tikak and Namdang adjoin each other, and as the old workings of both mines are interconnected, the presence of gas at Tikak points to gas being present also at Namdang. The second reason is as follows :—To the rise of Namdang mine there is a level driven in on the outcrop from which there is a road leading to the Namdang old workings. In this road near the level there is a ventilation brick stopping. The morning after the accident this stopping was found to have been partially blown inwards, towards the old workings. Although not conclusive, I consider that this is more likely to have happened in the case of an explosion of gas in the old workings than in that of a heavy fall.

FALLS OF ROOF AND SIDES.

No. 8. Budruchak Coal Mining Company's Budruchak coal mine.

A gallery previously driven narrow was being increased in width. This had been done for a length of 26 feet. In the first 14 feet three bars had been set owing to a distinct slip in the roof running up the centre of the gallery. For the remaining 12 feet however no timber had been set, and a piece of the roof

7′-3″ × 7′-0″ × 6″ suddenly fell and killed a miner. The manager said he had seen the place the day before and intended to put bars up every 6 feet, and that a bar would have been put up the following day. This is not a sufficient precaution in a roof of this nature. Had temporary props been set the accident would have been averted.

No. 10. Gopalichak Coal Company's Gopalichak coal mine.

An original pillar had been split leaving 2′-6″ of roof coal, and while a miner was at work on one of the half pillars roof coal 12′ × 3′ × 2′-6″ fell on him and killed him. Roof coal in pilllar getting cannot be relied on to the same extent as that in galleries, and timber should always be set in such cases as a precaution. A contributory cause of this accident was the fact that too many pillars were being got at the same time. This must lead to general instability of the strata, and consequently to liability to accidents of this nature.

No. 17. East Indian Coal Company's Kenwadih coal mine.

By this accident four persons were killed by a fall of roof about 25 feet square by 2′-6″ thick. This unusually wide place was fenced off on the side nearest the main level. The gang however were sent to work at a place beyond it and between this place and the roof which fell there was no fence. Rule 7 lays down that the entrance to any place which is not in actual use or course of working and extension shall be fenced. In order to properly comply with this rule, when miners are put to work in a part of the mine not regularly worked, a complete cordon of fences must separate their working places and travelling road from the unused workings.

No. 21. Raniganj Coal Association's Alkusa coal mine.

The manager had just given orders for a piece of overhanging roof coal to be removed at a place where a small pillar was being got, and when he was a few feet away a miner passed under the place and roof coal 13′ × 4′ × 1′-6″ came down and killed him. In this case there was only one prop under one end of the portion which fell. The area unsupported was far too great and the miners who had worked there last had worked under dangerous conditions for which the subordinate officials were to blame. The small pillar or knob was one of 60 which had been cut up out of 15 original pillars. This is not the way to remove pillars with safety. The original pillars should be removed one or two at a time leaving the others intact to support the altered strain on the roof.

No. 25. Messrs. Apcar & Company's Charanpur coal mine.

In this case a woman was killed by a fall of a ton of roof coal. The miners cutting this roof coal had practically no experience of such work and there was apparently little or no supervision over them. They were allowed to cut roof coal when and where they liked. A narrow dyke running parallel with one side of the gallery had made the coal softer than usual, which would have been detected had the supervision been adequate.

No. 33. Bengal Coal Company's Sitalpur coal mine.

No less than twelve persons were killed by this fall of roof and the circumstances attending it are of a very unusual character.

Pillars were being got in the Dishargarh seam which is 20 feet thick and lies at a depth of 300 feet. Immediately above the coal is a band of shaley sandstone 4 feet thick and above this is coarse-grained, hard, massive sandstone up to the surface. Owing to the tender nature of the former about 5 feet of coal is left under it as a precautionary measure of support wherever the seam is won. In

goafing operations it is found that the shaley sandstone, with its coal support, falls almost immediately after the withdrawal of the timber ; its collapse may be delayed a few hours, but the delay never exceeds two days according to a statement made by the manager. It appears, therefore, that this roof is supported more or less by timber during the period of goafing. With the hard sandstone or main roof this is not the case. Large areas of coal may be extracted before its condition is affected.

Goafing, or pillar getting, had been going on for eighteen months and an area of 17 bighas had been goafed. The main roof had not fallen in any part of this area, but the roof coal and shaley sandstone had fallen completely. It was the sudden collapse of this lower roof over a small area that caused the accident, which is illustrated by Plan D.

The accident occurred about 7 P.M. on Saturday the 15th October. On Friday morning the manager and deputy chief mining engineer made an inspection of the goaf and found miners reducing a stook, or small pillar of coal, marked B on the plan, under cover of timber set in the area edged with pink. Instructions were left with the assistant in charge of the work to further reduce the stook and then to withdraw the timber. It was reduced accordingly until it was only about 3 feet long by $1\frac{1}{2}$ feet wide and by Friday evening all the timber in this area was withdrawn. Crush on the stook was noticeable at this time shewing that the roof was being strained. No further work was done that night.

Early the next morning, Saturday, the assistant drew off the timber, around another stook of coal, marked A on the plan in the area shewn by crosses, though with difficulty, owing to the props having jammed, and immediately afterwards the roof collapsed in the whole of the area shewn hatched.

An hour later the manager arrived on the scene to see what the effect of the collapse had been and he found that a considerable area of the roof, from under which timber had been drawn the day before, was still standing and, except for a little bad roof near the crushed stook B, was sound, and furthermore that a quantity of roof coal and stone had been precipitated under it from the recent collapse. The amount of coal lying on the ground did not exceed 25 or 30 tubs or about 15 tons, but this the manager decided to secure. He thereupon issued orders for the area enclosed thus —•• —•• on the plan to be retimbered with the object of recovering it. Propping was commenced soon afterwards and at 5-30 P.M. the assistant reported to the manager that the place had been retimbered. About twenty-four miners reached the place just before 7 P.M. and commenced to load up coal under the supervision of a sirdar. At 7-15 the roof suddenly collapsed, without warning, over the area coloured pink on the plan killing the sirdar and 11 miners and injuring two others. Only those carrying coal to the tubs escaped. The collapse extinguished all the lights and caused the eight props shewn on the plan lying on the ground to be dislodged by falling coal and stone.

In the course of the evening the manager had written to the assistant to visit the miners after dinner to see how they were going on and he had just reached the shaft bottom to carry out the order when the disaster occurred.

This wholesale sacrifice of human life arose out of a desire to get 15 tons of coal quickly regardless of the obvious danger incurred. Not only were the miners admitted to work in a goaf at night, a practice hitherto prohibited, but they were admitted into an area from which the timber had once been withdrawn. The resetting of the timber must have been carried out under conditions of danger and this course of action was pursued in spite of the experience possessed by the manager of the treacherous nature of the roof, for he says " it follows the withdrawal of the timber almost immediately, within an hour or so, and at the most never hangs more than two days." In this case the timber was withdrawn by 6-30 P.M. on Friday and the collapse occurred at 7-15 P.M. on the following day. There is no proof of the number of props which were reset as the fall buried whatever there may have been. It is quite possible, nevertheless, that a good number of props were reset as the operation had taken many hours. The assistant stated that if the " fall " could be cleared probably 15 props would be found. If the props had been demolished by the weight vertically applied the creaking and cracking of the timber would have given ample warning of impending danger to the miners and particularly to the sirdar who was there solely for the purpose of listening. But there appears to have been no warning and it is to be inferred that what happened was that owing to the slope of the previous fall, it was

impossible to set timber right to the goaf edge in consequence of which the unprotected roof heeled over and the timbers were in this way knocked out.

The question of whether a violation of Rule 3 made under Section 20 of the Indian Mines Act could be proved against the manager was considered. This rule reads " The roof and sides of all travelling roads and working places shall be made and kept secure." He gave instructions that the place was to be retimbered and was satisfied that his instructions had been carried out although he did not go underground to see for himself. That he was not quite easy in his own mind as to the conditions under which these men were to work is shown by the fact that he wrote in the evening to the European assistant to make a special night visit to them. It could not however be proved that the timber was not set in sufficient quantity to satisfy normal conditions or even in excess of the requirements of such conditions, and in the absence of such proof it was considered that a clear case could not be made out.

The case was also considered by the District Magistrate as to whether a case against the manager should be taken under Section 304A of the Indian Penal Code. After the Inspector of Mines in India who investigated the accident had given evidence before him, the Magistrate passed orders as detailed in Section IV of this Report.

The manager holds a second class certificate of service under the Indian Mines Act. He was managing this mine under a temporary authorisation, first granted by the Chief Inspector of Mines in India from the 6th July 1910 to the 30th September 1910 and afterwards extended to the 30th November 1910. It was withdrawn on the 15th November 1910.

No. 37. Royal Bengal Coal Company's Kusumkanali coal mine.

This accident, which is illustrated by Plan E, was caused by a piece of sandstone, measuring 12′ × 8½′ × 1′-4″ average thickness, falling from the roof of a gallery upon five miners who were engaged in cutting floor coal. Three of them were killed outright and the others were injured.

The gallery in question had been driven sometime ago and was really a travelling road to the places where the deceased were accustomed to work. As they were proceeding to these places on the day of the accident in company with the sirdar, it appears from the latter's evidence that they drew his attention to the existence of some floor coal and inquired from him if they could cut it. Before giving his consent he claims to have tested the roof which subsequently fell with the aid of an iron-shod stick, and also asked the permission of the manager, who was near the pump some distance away at the moment, to allow the men to work. The manager, it is alleged, enquired as to the condition of the place, and being assured by the sirdar that it was safe, gave his permission. Accordingly the men were allowed to work there. This was about 10 A.M.

At 2 P.M. the sirdar says he again inspected the place and found the roof safe. At 4 P.M. the roof fell.

There were no signs that pillar cutting had been done at this place, that any shots had been fired, or that anything else had been done to weaken the roof which was therefore in all probability weak and ready to fall when these miners were set to work under it. The excessive width of the galleries and the small size of the pillars, shown on the plan, could have conduced to such weakening. There was a natural break, which could have been seen before the accident, in the stone which fell.

It was considered that proper steps had not been taken to support this roof and it was also observed by the Inspector of Mines who investigated the accident that unused galleries in the mine were unfenced. Such necessary support and fencing are required by rule and prosecutions were instituted against the owner and agent of the mine. These cases are still pending and a detailed account of them will be given in Section IV of the next Annual Report.

No. 44. New Beerbhum Coal Company's Chinchuria coal mine.

Two miners had undercut the coal to a depth of 2′-6″ along the side of a gallery which was being widened, when a mass 12′ long fell, and one woman was caught

by a large block of coal. The coal had been undercut for too great a length, without being spragged. It is best in such cases to see that coal is undercut in short lengths only and taken down before fresh undercutting is commenced.

No. 46. Eastern Coal Company's Bhowra coal mine.

A fall of side coal 27′ high × 10′ wide × 1′-6″ thick fell from a pillar which was 34 feet high, killing two miners. There was a strong suspicion that they had been robbing this pillar. It was certainly evident that they had worked in places other than their proper working places. There was not however a single company's official of any description underground at the time, which was the middle of the day, when the mine was at full work. The sirdar admitted that miners took advantage of his absence to rob pillars, and this was confirmed by the European assistant. If the supervising staff is so attenuated that the miners can be left without a single official in the mine, accidents are bound to occur. I would also draw attention to the height of this gallery which was 34 feet. It is almost impossible for a manager to see that rule 3, to the effect that roof and sides shall be kept secure, is complied with in galleries as high as this. The system of working in such cases is the usually prevalent one of driving a gallery from ten to twelve feet high in the top of the seam and then cutting floor coal down through the full thickness of the seam. It is difficult to avoid accidents from falls of side when floor coal is cut in thick seams. For this operation, which at first sight appears a simple one, is attended with danger unless the most careful examination of the sides is made, as, owing to slips in the coal in the pillars, large masses of the sides are apt to become loose. Before the floor coal is cut these sides are locked by it at their base and when this support is withdrawn they naturally fall. In high galleries not only is the danger greater, but the necessary examination of the sides is rendered more difficult. Since this accident the management have worked the seam in two sections. This system has lately been tried at some mines. Its general adoption in seams of extra thickness would bring about a reduction of accidents and would be rewarded by the ultimate extraction of more coal from the seam. One manager who has adopted it has assured me that nothing would induce him to revert to the old method.

No. 47. A. Subba Naidu's Inurkurti mica mine.

Twelve persons were working in a quarry 80′ × 60′ × 25′ deep. An overhanging mass fell from the south wall consisting of decomposed pegmatite, sloping 10 degrees from the vertical, causing injuries to three men, two of whom succumbed. The accident was due to the neglect to slope at a safe angle the side of the quarry or to cut it in steps. Both the manager and the subordinate officials appear to have been negligent and incompetent. The manager had no experience of mining and had only been about mines for two years. The head mistry was suspended from duty after the accident and the assistant mistry was reduced to the ranks.

No. 52. Eastern Coal Company's Kankani coal mine.

Three men were cutting floor coal against orders in an old gallery twenty-five feet high when 20 tons of coal fell from the corner of the pillar on to them, injuring one so severely that he died next day. These men had been previously sent away from this place. At the time when the accident occurred however not a single company's official was underground. Since this accident the management have worked the seam in two sections.

No. 55. The Shivrajpur Syndicate's Shivrajpur manganese mine.

Hitherto the record of manganese mining in India has been free from any serious calamity, but unhappily this record has been impaired by an accident which occurred at the Shivrajpur mine about the close of the year. While twenty-seven persons were working at the bottom of a quarry a sudden collapse of overhanging

side took place which involved the death of twelve persons and injuries to three others. Four days elapsed before all the bodies were recovered owing to the restricted area of the place and the large amount of rock which fell.

The deposit of manganese that was being worked outcrops along the top of a hill ridge situated about 200 feet above the plain and is so intensely folded that a complete anticlinal and synclinal fold occurs about every 150 feet. It lies at an angle of 34° from the horizontal and varies from 6 to 10 feet in width. The enclosing walls are of quartzite.

Development has proceeded from the outcrop to the dip by open working, the waste being cast forward down the slope of the hill. Only so much of the barren rock necessary for the extraction of the ore has been removed with the result that masses of folded rock have been left overhanging the workers. Being of strong quartzite this rock does not readily decompose having in fact been exposed for some years without undergoing any perceptible change. Occasionally isolated pieces, breaking off with a conchoidal fracture, shew signs of falling and these are dressed ; but there is no record of an extensive fall having occurred in the history of the mine. This immunity from falls has undoubtedly led the management to be less suspicious of this danger than would otherwise be the case where frequent falls proclaim the treacherous nature of rock.

At the time of the accident the persons were working in a synclinal fold at a point situated 45 feet below the top of the quarry with the fold of the foot wall projecting over them. Without any warning, according to the evidence of the survivors, a shell of rock 50 feet long, 30 feet high and 2 feet 6 inches thick fell upon them from the folded side above.

This shell was probably a stratified bed of rock before metamorphism and contortion had altered it.

The whole mine is under the control of a manager and it is divided into two sections, each supervised by a European assistant. The assistants are expected to make a daily inspection, but some time prior to the accident this work had devolved upon one assistant as the other had gone up-country to recruit labour. On the day of the accident, although the event occurred at 3-45 P.M., the place had not been inspected by any one. The assistant stated that he was on his way to inspect it at 11-30 A.M., but returned to supervise the loading, a duty which kept him employed until the accident happened. The manager had not visited the mine that day so that the miners had been working practically the whole day without any supervision whatsoever.

The place where the accident occurred was last inspected about 4 P.M. the previous day by the assistant who stated that he was then satisfied with its safe appearance. From this time onwards nothing unusual had happened. About 5 lbs. of country gunpowder had been fired at noon beneath the side which fell, but the detonation is not likely to have affected the stone, as similarly placed shots have been a feature of the daily routine of work for a long time past.

The probable explanation for the sudden collapse may be found in the unsuspected tendency of the quartzite to weather after long exposure along the original lines of stratification and gradually draw away from the main body. This action would be assisted by the strained condition of the rock consequent upon the folding to which it had been subjected.

That overhanging stone in such an unsound condition should escape detection by the officials is a condemnation of the system of inspection in force. Both the manager and his assistants appear to have been satisfied with judging the condition of the stone by the eye, and have regarded it as unsound and dangerous only where cracks in the stone shewed themselves. Detection has been followed by quick remedy in the past and it may be conceded in this case that the management were unaware the miners were working in any danger. The danger was not ignored, it was simply not recognised.

Relying solely upon a sight inspection was a mistake. " Sounding " would have been much more trustworthy. In all probability the dangerous condition of the stone would have been revealed days before if this simple expedient had been used.

Under the new rules that are about to be promulgated for manganese mines it will be incumbent on the manager to see " that the sides of open workings shall be

sloped, stepped or secured in such a manner as to prevent danger from falls of material." If this rule had been in force the manager would have had to see that the systematic caution which this rule demands was exercised.

In the meantime the management have given an assurance that persons shall not be allowed to work beneath overhanging side, that all such side shall be dressed back to a safe slope before work is resumed, that the present method of examining the working places by sight shall be supplemented by " Sounding ", that a daily inspection of the mine shall be made by a competent person, and that when the mine has been unworked for more than twelve hours this inspection shall be made within two hours before any person is allowed to enter the mine.

No. 56. Burn and Company's Pottery coal mine.

A young girl was injured by a piece of coal falling on her, she sustained compound fractures of her right leg and arm from the effects of which she died. The accident in itself does not call for special remark, but the Inspector drew attention in his report to the fact that the girl had been sent to the surface, doubled up in a bucket, without the fractured limbs being supported in any way. Her injuries were probably aggravated thereby. The Inspectors are of opinion that many lives might possibly be saved if the stretcher, splints and bandages which are required by the law to be kept at every mine were brought into use before the injured person is removed from the scene of the accident. In most of the Bengal coal mines the physical difficulties are not such that the colliery doctor could not proceed underground and make the injured person's journey to the surface as easy as possible under the circumstances.

IN SHAFTS.

No. 61. Equitable Coal Company's Bejdih coal mine.

A shaft had been sunk to a depth of 358 feet and had been allowed to fill with water. A few days before the accident a running trolley had been placed on the top of the pit. Between this trolley and the side of the shaft was an opening thirteen inches wide. This side of the pit was unfenced. At about 7 P.M., when it was dark, a banksman carrying coal to a pit bank fire caught his foot against a beam and fell into the shaft through the opening. His body was recovered in the sump next morning.

It was alleged by the manager that deceased was intoxicated, but the Inspector of Mines who investigated the accident was satisfied from the evidence at his inquiry that this was not so.

The side of the pit should have been securely fenced.

No. 66. Katras Jharia Coal Company's Sibpur coal mine.

As deceased, with three others, was descending the shaft in a cage, he fell out. Why he fell and the exact point in the shaft, which is 242 feet deep, at which he fell, could not be definitely ascertained, but he appears to have fallen out before the cage had reached a point 60 feet down. He would not have fallen at all if the cage had been fitted with fence gates, which it was not. During last year several more managers adopted this precaution, and it is to be hoped that before long this simple appliance will be considered as necessary an adjunct to a cage as a handle bar. It is always more desirable that such an improvement in mining methods should come about by the initiative of the mining community than that it should be forced upon them by a rule. The class of labour employed and the fact that mine owners in India have the unusual benefit of being permitted to employ women underground render it imperative that in their journeys up and down shafts the work people should be safeguarded as far as possible. It is a common complaint that it is difficult to attract miners to shafts, and that they much prefer to work in inclines, where they can walk down to their work. The number of shafts is yearly being increased, and an increase in depth which necessitates more rapid winding

is accompanying the increase in number. It should not therefore require much persuasion to induce managers to adopt an appliance which should tend to overcome the reluctance of miners to descend shafts.

No. 68. East Indian Railway Company's Serampur coal mine.

A small piece of coal fell from a loaded tub which was being withdrawn from the cage on the surface and struck deceased, the onsetter, who was pushing an empty tub out of the cage at the shaft bottom. The distance between the protection beam and the cage was 16 inches. This is too great a distance for safety as this accident proves. Six inches is ample. In this case the reason given for the wide space was that owing to the top of the inset arch being low it was not possible otherwise to draw long timber out of the cage. In such a case a hinged or moveable protection board could be adopted. Since this accident the protection beams have been put 6 inches from the cage.

No. 70. New Beerbhum Coal Company's Borrea coal mine.

The cage with a loaded tub was let down on to the keps at the surface with a bump and a piece of coal, weighing 1½ lbs., fell down the shaft and struck deceased, a miner, who was crossing the shaft bottom at the time. It was against standing orders for him to have crossed in this way and there was a proper travelling road round the shaft. The chief point however to be noted in connection with this accident is that there was a space of 8 inches between the end of the cage and the edge of the pit bank on the surface. To have a space of this width is both dangerous and unnecessary. Two inches clearance is ample.

BY EXPLOSIVES.

No. 73. The Standard Coal Company's Benahir coal mine.

Three men and a boy were in a hut, and one of the men was engaged in making country powder into cartridges, when probably from a spark the powder exploded. The man who was making the cartridges escaped and at once left the mine, but the other three were burnt so severely that they all died. One of the deceased, before he died, told the manager how the accident occurred. The Sub-Divisional Officer of Dhanbaid initiated proceedings against the manager under the Explosives Act and under the Indian Penal Code. These proceedings are referred to in Section IV of this Report.

IRRUPTIONS OF WATER OR FALLING INTO WATER.

No. 78. Bengal Coal Company's Murulidih coal mine.

The circumstances attending this accident by which six persons were drowned will be understood from an examination of Plan G. The galleries shown cross shaded had been driven some months before down to a dyke and they subsequently became filled with water. The haulage road and other roads to the east of it had been driven through the dyke and on the west side of it a level had been driven from a point just below the dyke so as to connect into the dip gallery from which the inrush came. This gallery had been driven a few feet through the dyke but its position was shown on the colliery plan to be further than was actually the case. Consequently the level gallery failed to connect with it and a gallery was set away to the rise to make the holing. No boring was done, but it was the intention of the officials to put a bore-hole through with a crowbar as soon as percolating water gave warning of the proximity of the galleries.

Whilst three men were at work in the gallery the pressure of the accumulated water burst the thin partition of coal remaining, and water burst through, gradually enlarging the hole until it was 2′ high by 2′-6″ wide. The men working in the gallery and four others in the level gallery were knocked down by the rush of water, but contrived to escape, though with difficulty. Four men were at work

in the main dip and three others in a cross-cut gallery a little east of them. Of these men only one was successful in withstanding the rush of water. He escaped by clinging on to the timbers and the edges of the coal pillars. The bodies of the other six were found five days afterwards at the places indicated on the plan. It is probable that in the darkness they mistook the small dead end rise gallery where they were found for the connected gallery further east by which they might have escaped. They had only worked two or three days at the mine and would have only a partial knowledge of the galleries other than their working places.

It is somewhat remarkable that, as far as can be gathered from the evidence, no percolation of water attracted attention until the inrush came. This may have been due to the fact that the dyke at this particular point is combined with small faults which throw the coal down in the direction of the dip. This enabled the working gallery to be driven to a point beneath the floor of the water-logged gallery. The floor was probably covered with a layer of silt which prevented percolation.

The manager of the mine was aware of the accumulation of water and when he visited the level gallery two days prior to the accident he found that the face of it had reached a point beyond the presumed position of the gallery into which a holding was to be made. He stated that he told the assistant to put in a bore hole with a crowbar at once. The latter stated that his instructions were to commence boring as soon as percolation became evident.

The agent of the mine made an inspection of the mine in company with the manager four days before the accident and visited the vicinity of the gallery which holed into the water.

As it was evident that no bore holes had been made in advance as required by rule a prosecution was instituted against the agent and the manager of the mine, as referred to in Section IV of this Report.

BY HAULAGE.

No. 79. Nodiha Coal Company's Nodiha coal mine.

Five loaded tubs ran wild down a haulage incline, and killed a woman standing in the incline at a landing 200 feet down. There was a printed notice at the mouth of the incline forbidding persons to travel on it while the set is in motion. But with main rope haulage it is impossible for a person entering the incline from a landing to know that a set is in motion if it is at a point outbye of the landing. Movable fences at such places which would fence them off from the incline when the set is in motion would greatly minimise haulage accidents. Five of the haulage fatalities last year would have probably been avoided had such fences been in use.

The tubs ran wild owing to a defective weld in one of the coupling chains. These were specially imported from Europe on purpose to reduce the heavy cost of repairing tubs which were damaged through the breaking of those formerly used, which were made locally, so that the management should be given credit for doing their best to provide sound coupling chains. It is most important that both on haulage roads, especially on those which are steep, and in shafts, they should be of the best material. It is also important that they should be periodically annealed.

No. 80. Kusunda and Nayadi Collieries' Kusunda coal mine.

The hookman had either omitted to couple the three front tubs of an empty set to the back three, or had coupled them improperly, and when he pushed the set over the brow three tubs ran wild. Two women were in the incline waiting for their tubs, and both were injured, one dying some days afterwards. The primary cause of this accident was gross negligence on the part of the hookman, who absconded, but my remarks on accident No. 79 as to movable fences apply in this case also, and I wish to draw attention also to another defect. The provision of a second stop block or runaway point between the stop block at the top of the brow and a convenient point down the incline is now recognised by managers

as an absolute necessity for the prevention of runaway sets from the surface, and there is, I trust, to-day no haulage incline on which one is not provided. In this case a runaway point was fixed 195 feet down, on a gradient of 1 in 9. This distance is much too great, firstly, because a runaway set would be travelling so rapidly by the time it reached thus far that the setting over of the point would not prevent the tubs being hurled down the incline, and secondly because it cannot conveniently be actuated from the surface. In this case another man was stationed down at the point and on receiving a shout from the hookman would set the point over. In conversation with this person it was found that the practice was just what would be expected. The hookman shouted as he was proceeding to push the tubs over, the man below set the point over, and ran to the nearest manhole.

The correct distance for the contrivance is just sufficiently far down to allow the whole set to be on the gradient and the rope to be taut and it is essential for effective use that whatever is provided should be actuated from the surface. A second stop block to which a cooly has to walk down each time it has to be opened or closed is generally found to be left open more or less continually.

No. 81. Bilbera Coal Company's Baraboni coal mine.

A woman who was carrying coal from a west level to a landing east of the haulage incline attempted to cross the incline between the tubs and while she was doing so the tubs were drawn off. She was knocked down receiving injuries from which she died a week later. She could have gone round the tubs. It is however a dangerous practice, and a bad arrangement, for loading coolies to have to cross and recross a main haulage road. The same remark applies to the practice, which is not so common as it once was, of coolies loading on the straight incline while the tubs are travelling up and down the incline outbye of them. It does not require great skill to avoid both arrangements and to lay out the system of haulage so that the coal is loaded at suitably placed landings on either side of the main incline.

No. 86. Bengal Coal Company's Sanctoria coal mine.

A tub which was blown over the brow of an incline by a storm killed a man who had taken refuge from the storm underground. There was no second stop block or runaway point on this incline.

NOT INCLUDED IN STATISTICS.

No. 5. Kusunda and Nayadi Collieries' Kusunda coal mine.

As six loaded tubs were being drawn up through a cross measure drift a coupling broke and four tubs ran wild killing a child a year old who was being carried by his sister aged eight. As far as the occurrence itself was concerned it was accidental, but these children were allowed to remain out on the haulage road, while their parents worked in a gallery inbye, the reason being that this gallery was a wet one. It has always been urged as the greatest argument in favour of young children being allowed to go underground that they are safer there with their parents than being left by themselves on the surface. But the argument goes altogether if instead of being kept with their parents they are allowed to wander about in what is an exceedingly dangerous part of a mine. I am pleased to report that the present manager of this mine, who was appointed on a date subsequent to that on which the accident occurred, stated that he intended by degrees to stop all children going underground. This is done at some mines, and does not appear to have caused discontent.

No. 25. British India Coal Company's Napara coal mine.

In this case a child of five was returning home in the twilight and fell into a feed water tank containing 4′-9″ of water. Artificial respiration was tried for half an hour but without avail and the child died from drowning.

The top of the wall protecting this tank was only 18 inches above the level of the ground.

During the last six years there have been several deaths from drowning in unprotected or insufficiently protected feed water tanks. In the majority of cases the persons drowned have been young children. These tanks are therefore dangerous and should be walled or fenced to a height of at least 3 feet above the ground. What frequently occurs is that when they are first built they are finished off with a wall. Earth and ashes are then allowed to accumulate gradually until they are flush with the top of the wall, after which the tank is of course no longer protected.

Section IV.—Prosecutions and additions to the Act.

PROSECUTIONS.

The following prosecutions which have been completed were instituted during the year or were instituted after inspections made during the year.

Arising out of the fatal accident by explosives at Benahir coal mine on the 11th February, which is described on page 18 of this Report, proceedings were taken by the Magistrate against the manager of the mine under Rules 10-35 under the Explosives Act and under Sections 286 and 304(*a*) of the Indian Penal Code. The cases were dismissed, the Court holding there was no evidence in support of the circumstances as originally reported and that all the evidence went to show that the gunpowder was made into cartridges in the proper place.

The owner of the Tarajhopa mica mine was prosecuted under Section 22(2)(*b*) of the Indian Mines Act read with Rule 8 under Notification No. 11793—103, dated the 30th December 1908, made under Section 20 of the Act, for failing to report the occurrence of a fatal accident. He was ordered to pay a fine of Rs. 20 or to undergo rigorous imprisonment for one month.

The agent and manager of Murulidih coal mine were each prosecuted under Section 22(*e*) of the Indian Mines Act read with Rule 6 made under Section 20 of the Act. This prosecution arose out of the fatal accident by an inundation of water which is described on page 18 of this Report. By rule 6 it is enacted that "where a place is likely to contain a dangerous accumulation of water, there shall be constantly kept at a sufficient distance, not being less than 10 feet in advance, at least one bore-hole near the centre of the working, and sufficient bore-holes on each side, and, where necessary, above or below."

In the case against the manager, the facts were admitted but two lines of defence were taken (1) that he had taken all reasonable means by instructing the underground assistant to make bore holes and (2) that to the best of his knowledge he supposed the accumulation of water to be not dangerous because he thought a dyke of 14 feet of stone intervened between the water and the old workings.

The Court did not accept either of these pleas. The accused was ordered to pay a fine of Rs. 300 or to undergo rigorous imprisonment for one month.

In the case against the agent, the facts were admitted but the accused laid stress on the fact that he was not the agent and, apart from the Annual Returns, had always signed himself as Chief Mining Engineer. The judgment is an important one and the following extracts are made from it:—

"The facts and causes of this accident are admitted by the accused . . . . . and the manager of the mine was tried and convicted.

"In this case however the prosecution state that the accused as agent of the company also is guilty under Section 14 of the Mines Act. There are two points for consideration—

" (1) Was the accused at the time of the accident agent of the Bengal Coal Company ?

" (2) If so, had he taken all reasonable means to prevent the contravention of the rules ?

" (1) I hold that the accused was an agent of the Company. The term agent is defined in Section 3(*a*) of the Mines Act which runs as follows :—' Agent ' when used in relation to a mine, means any person appointed as the representative of the owner in respect of the management of the mine or any part thereof, and as such superior to a manager under this Act.

" The accused contends that he is not the agent as he is under the orders of the managing agents and has to get sanction from them for expenditure proposed. This may be but he is still *a* representative of the owner in respect of the management of the mine and as such superior to the manager. The evidence of Mr. Kirk (prosecution witness 1) shows this clearly. The witness states ' His (the accused's) duty was to give me instructions in any work I had to do. I had to follow his instructions.' The definition of ' agent ' in the Mines Act differs from that in the English Coal Mines Regulation Act, 1887, so that ' managing agents ' should not be included in it. There is nothing to show that the ' agent ' must necessarily have a free hand.

" As this is a criminal, not a civil case, I have considered only whether the work done by the accused makes him an ' agent ' as defined in the Act without reference to the manner in which the accused signed himself in the Annual Returns, etc., though both parties laid stress on the fact that the accused signed himself at times ' Agent ' and at other times ' Chief Engineer ' of the Bengal Coal Company.

" (2) I hold that the accused had taken all reasonable means to prevent the contravention of the rules. . . . . The accused knew nothing of this rise gallery or of the intention to drive it up to the old higher workings. . . . . Admitted that the accused was in the mine four days before the accident. It cannot however be held to be the duty of the agent to examine every part of the workings of a mine. His duty is more that of general supervision and he cannot be held responsible for contravention of the rules by a competent manager appointed to work under him unless it is shown that he knew or ought to have known of the intended contravention. . . . . The accused is acquitted."

In connection with the fatal accident at Sitalpur coal mine described on page 12 of this Report, the responsibility of the manager was considered by the District Magistrate under Section 304A of the Indian Penal Code. After examining Mr. G. C. Leach, the Inspector of Mines who investigated the accident, the Magistrate passed the following orders :—

" I have examined Mr. Leach, Inspector of Mines, and am satisfied that there is not sufficient evidence to bring home a case under Section 304A against the manager.

" Mr. Leach's statement is important in many ways. He allows that the props said to have been used were sufficient to meet the vertical pressure of the portion of the roof which fell. He considers that the props gave way owing to lateral pressure caused by the props not being set near enough to the goaf edge.

" This is his opinion but he has not sufficient data to enable him to say for certain that this actually was the case.

" His statement shows that, although goafing had been going on for some time, say about one year, in that part of the mine, the main roof had not yet followed the removal of the pillars. There is, it is true, no certainty when the main roof will fall. Still the manager may have considered that there was little probability of the main roof coming down when he decided to reset the props. And as Mr. Leach observes it was quite possible to set props to take the weight of the shaley sandstone which actually fell. The manager, therefore, although in my opinion he took an extraordinary risk for a very small amount of coal had some grounds

(if propping was properly done) for believing that he had taken sufficient measures to ensure the safety of the workers sent to remove the coal. For the portion of the roof (which actually did fall) could in Mr. Leach's opinion have been propped up if the props had been properly set.

" The setting of the props was left to the assistant manager. Unfortunately the debris cannot be removed and it is impossible to say with certainty how many props were set and whether they were properly set. The fall of the roof clearly indicates that the props were either insufficient or improperly placed. This, however, is not sufficient for a criminal prosecution.

" To me it appears to have been most dangerous to attempt to reprop the roof after the supports had once been withdrawn. The portion of the roof which actually came down after the props were set might have come down at any time while the props were being put in position. The manager had no right to take this risk. The accident, however, did not occur at this stage of the proceedings and consequently Section 304A does not apply to this part of the manager's proceedings. No doubt had the propping been done efficiently the accident might have been avoided. As matters stand it is impossible on the evidence to make either the manager or assistant criminally liable for the manner in which the roof was propped.

" It would be difficult if the evidence showed that the main roof usually fell in within a few hours. For it would be impossible to support the main roof. The manager, I take it, acted on the assumption that the main roof would behave as it had done in the places near by where goafing operations had been going on. His anticipation proved correct.

" The manager's action in deciding to reset the props and take out the coal, a very small quantity, was quite unjustifiable and did as a matter of fact cause twelve deaths. I do not think, however, a case under Section 304A will stand. The proceedings are dropped."

Section V.—General Remarks.

HEALTH AND SANITATION.

There was no great epidemic in the Bengal coalfields in 1910. The total rainfall at Sitarampur in the Raniganj coalfield was 51·09 inches. Rain fell on 99 days and only on two days exceeded two inches. The Sanitary Engineer of Bengal has been engaged in drawing up schemes for a water supply to the Jharia coalfield and his proposals and plans will shortly be laid before the Committee, appointed by the Government of Bengal in January last to consider them. Mr. H. J. McIntosh, Commissioner of the Chota Nagpur Division, is the Chairman of this Committee.

There was an outbreak of plague at the Kachurwahi manganese mine of the Central India Mining Company and at almost all the mines of the Central Provinces Prospecting Syndicate. But the managers of the companies took rigorous measures to stamp it out immediately with the result that the health of the camps was soon restored. The water supply to the coolies at these mines is well looked after.

The persons employed in the Burma Development Syndicate's Chooling tin mine in the Mergui District suffered a good deal from Malarial fever and several of them died from it in the hospital at Victoria Point.

Mosquito operations are in force at the Burma ruby mines and a considerable amount of draining has been done.

AMBULANCE WORK.

It is gratifying to report that the ambulance movement last year has shown considerable vitality. Classes in " First Aid to the Injured " were held in the early part of the year in the Raniganj coalfield at Dishargarh and the success which attended them led Mr. G. C. Leach, Inspector of Mines in India (who

promoted them) to organize classes in the latter part of the year in the Jharia and Giridih coalfields.

Altogether seven classes have been held, *viz.* two at Dishargarh, two at Kusunda, two at Sijua and one at Giridih. Instruction is still in progress at the last named place where there is an attendance of 30 members.

At the other places 231 members joined the classes out of whom 86 sat for examination and all passed with credit. A label was obtained by one candidate, medallions by three, a voucher by one and certificates by the rest.

Dr. W. P. O'Connor, Chief Medical Officer, Equitable Coal Company, Limited, Dr. F. T. Simpson, Chief Medical Officer, Indian Collieries Syndicate, Limited, Dr. W. D. Williams, Medical Officer, Indian Mining Association, and Babu Sirish Chandra Bose, Assistant Surgeon, East Indian Railway Collieries, gratuitously delivered the lectures. Dr. O'Connor and Dr. Simpson voluntarily conducted the examinations and expressed themselves highly satisfied with the skill shewn by the candidates. The mining community must feel deeply indebted to the above named gentlemen for the pains they have taken to lessen suffering amongst the miners.

There are now at least 150 persons actively engaged in mining in the coal fields who are competent to stop bleeding, fix splints, tie bandages, dress wounds and carefully transport injured persons.

There is a proposal on foot to band together the whole of the coal mining industry under the direction of a Central Committee controlling local centres in each district, the object being to greatly increase the number of classes, to arrange for instruction in the vernacular and to start a fund for placing the movement on a sound financial basis.

Ambulance work should spread and become a real force in the coalfields, because it is to the advantage of the industry. The labour will have greater confidence in the management and the management will find that the unproductive period after an accident will be appreciably diminished.

MINING EDUCATION IN BENGAL.

Mr. E. H. Roberton, the Professor of Mining Education at Sibpur College, has reported that at the diploma examination held in 1910 six candidates were successful, and of these five have since entered on appointments in mines. Owing to the depression in the coal market the demand for passed students was not so great as previously, but this condition is probably of a temporary nature, and the demand will once more be apparent as mines now closed down are reopened.

One old student was successful in gaining a first class certificate of competency in 1910, and several are sitting this year at the examination for certificates of competency.

The wider spread of the use of electricity in the mines, several new and up-to-date plants having recently been installed, should encourage a certain number of the students, after they have gained their diplomas, to remain for a further year in the college in order to pass through the electrical department. The special knowledge thus gained, and the sense of responsibility developed in working the college electrical plant (which includes both three phase and continuous current and also a large battery of accumulator cells) should fit such students in a special manner for employment at these up-to-date mines.

The cold weather mining camp was pitched at Bhaga during November and December 1910. Surveys were made of portions of the Lodna and Standard Coal Company's mines, and visits of inspection paid to many collieries, including Sudamdih, Jamadoba, Kenwadih, Bhaga, and the mines of the Raniganj Coal Association, Limited. The above collieries are laying down or are working electrical plant and supplying power for pumping, hauling or other machinery. Among other plants and workings seen were sinking operations at Kankani, pillar drawing at Bhaga and Barari, steep seam workings at Bhulanbarari and Sudamdih, screening plants at Kustore and Jorapukur, bye-product coke ovens and electrical and other plants at the East Indian Railway Company's collieries at Giridih. Field

geology work was carried on at Bhowra. Much of the success of the mining camp is due to the extreme kindness and courtesy of the mine managers, who are always ready to afford the Professor of Mining and his students every facility.

It is found that several of the "special" mining students (who must have had at least two years' practical experience in mines before joining the college) find considerable difficulty in passing the college examinations in the subjects other than mining (*e.g.*, mathematics, mechanics, physics, and chemistry). Such special students are allowed to join the college on a lower standard of admission than that required from the regular students entering the third year. It would not be advisable to raise the standard of admission, for then very few candidates (especially from among the Europeans) would be sufficiently advanced to be eligible. On the other hand the standard of the diploma should not be lowered. Its present standard is comparable with that of the best mining colleges of England and America, and it should certainly remain so.

The chief reason for special mining students joining the college is the fact that from their previous work in the mines they are more fit to benefit from and appreciate the education they receive in mining and allied sciences, and in the college workshops; so that after passing out again they may apply to the fullest extent what they have learnt to their practical duties in the mines. Such students constitute a very valuable type, and whether they fail or not in so far as the diploma is concerned, the industry must ultimately benefit from the knowledge they absorb while at the college. In the case of failure to gain the diploma a certificate showing the subjects in which the student is successful might be issued, so as to give them every encouragement.

Mr. W. T. Griffiths, the Mining Instructor in the Bengal coalfields, has reported that the total number of names on the registers for the session 1909-1910 was 325. The average number of students who attended the courses was very nearly 20 per lecture, and 74 students (15 Europeans and 59 Indians) made 50 per cent. or more of the possible number of attendances, and thus became eligible candidates for the sessional examinations. These were held on the 13th of June 1910. Of the 74 eligible candidates, 28 presented themselves and 18 were successful in obtaining the necessary number of marks to qualify for certificates.

At the close of the session Mr. Griffiths, whose agreement with the Government of India has terminated, returned to England. His lectures, which were carefully thought out and well delivered, have benefited a large number of colliery officials and mining students. The experiment is now being tried of carrying on his work by means of lectures which are given by colliery managers at the same centres, where lecture halls have been built. It is to be hoped that this scheme will prove a success for it is capable of being extended to other centres where the need of mining instruction becomes apparent.

TRUE MERIDIAN LINES IN BENGAL COALFIELDS.

At the instance of Mr. J. J. Turnbull, Superintendent of the East Indian Coal Company's collieries, and by the kind permission of Colonel S. G. Burrard, R.E., F.R.S., Surveyor General of India, true meridian lines have recently been laid down at the following six places :—

Place.		Situation.	Magnetic declination.
Jharia coalfield.	Dhanbaid .	On uncultivated land 200 paces north-west of Magistrate's bungalow.	1° 6′ 4″ E.
	Jorapokur .	On high ground about midway between the Bengal Nagpur Railway line and the Jharia-Pathardih road.	0° 59′ 39″ E.

Place.		Situation.	Magnetic declination.
Jharia coal-field—*contd.*	Jogta . .	Two furlongs south of manager's office, Jogta colliery.	0° 56′ 15″ E.
	Dishargarh .	On the old Bengal-Nagpur Railway embankment north of the Damuda river and south-west of No. 3 Pit, Dishargarh colliery.	0° 57 0 E.
Raniganj coalfield.	Dhadka .	West of office of Superintendent, New Beerbhum Coal Company.	0° 59′ 0″ E.
	Nandi . .	Near Sibpur-Raniganj road, west of bungalow of manager, Adjai Coal Company.	1° 1′ 0″ E.

Full information may be obtained at the offices of the Chief Inspector of Mines in India; the Superintendent, New Beerbhum Coal Company; and the managers of the Jealgora, Jogta, Dishargarh and Nandi collieries. Greater accuracy in the making of colliery plans will naturally result if instruments are checked periodically, and it is to be hoped that every advantage will be taken of the facilities now afforded.

MINING AND GEOLOGICAL INSTITUTE OF INDIA.

The total membership is now over 300 of which 251 are ordinary members. Three meetings were held during the year and at each of them much that was instructive was brought to light.

The influence of the Institute has been marked and if it continues to meet with loyal support from all classes of its members, its work in the direction of solving the peculiar problems and difficulties which confront those engaged in mining in this country will become more and more of value.

The Indian Mining and Geological Club in London is now fairly launched and is installed at 30, Furnival Street, E.C., and I would emphasize the desire expressed in the last Annual Report that members of the Institute proceeding to England should communicate with the Honorary Secretary at that address. Those who are guiding the destinies of the Club are prepared to assist firms and employers, who wish to engage professional men in England for mining or geological work in India, to secure the right person for the particular work for which he is wanted.

BOARD OF EXAMINERS.

The non-official members of the Board were, as in the previous year, Messrs. J. J. Turnbull and S. Heslop. Four meetings were held.

One first class certificate of service was granted and out of eight applicants holding foreign certificates eight were granted similar Indian certificates.

An examination for certificates of competency as colliery managers was held at Asansol on the 16th and 17th February 1910. There were 19 candidates for first class certificates of which 3 passed, and 22 candidates for second class certificates of which 5 passed.

It is now four years since these examinations were instituted. The examiners have found that the chief defects in the candidates' preparation are that, firstly, they are insufficiently acquainted with surveying, of which they have to give in the oral examination practical proof of their knowledge, secondly, they rely too much on text books and too little on what passes daily under their notice at the mines at which they are employed and, thirdly, their arithmetic is weak.

MINING BOARD.

Two meetings of the Mining Board were held during the year. The subject under consideration was the draft rules for mica, limestone and manganese mines.

EDWARD MEDAL.

In the last Annual Report in connection with an accident at the Panchgatchia coal mine in Bengal, attention was drawn to the personal bravery of a pilot engine khalassi named Ram Lal Bauri who saved two children from being run over by a wagon.

Ram Lal's name was submitted to His Majesty, the King-Emperor, who bestowed upon him the Edward Medal of the second class. The award was notified in the *London Gazette* on the 25th October 1910, and the medal was presented to him at Howrah Station on the 15th January 1911 by His Excellency the Viceroy.

This is the first occasion upon which this honour has been bestowed upon any person in connection with mining in India, but it should be noted that the Edward Medal of the first class was last year bestowed upon Mr. W. H. Pickering, late Chief Inspector of Mines in India, and now Superintending Inspector of the York and North Midland district in England. The bottom of a sinking shaft collapsed and a sinker was pinned between a heavy scaffold and the side of the shaft. Mr. Pickering descended the shaft and remained with him as long as he lived, running imminent risk of his own life from falling stones and bricks while doing so. More than one of his fellow-rescuers were severely injured.

OFFICIAL DUTIES.

Mr. J. R. R. Wilson was Chief Inspector of Mines in India until the 12th December, after which he resumed his service as a senior Inspector under the Home Office in England. He had two months and nine days' privilege leave from the 5th October to the 12th December.

Mr. Wilson's administration has left its mark for good on mining in India. His long experience and high professional attainments were always at the disposal of his staff and of the many who sought his advice, and those who consulted him seldom did so without having their knowledge enhanced thereby.

Mr. G. F. Adams was Inspector of Mines for No. 1 Circle until the 8th November. From the 9th November to the 12th December he officiated as Chief Inspector of Mines in India, being confirmed on and from the 13th December. He had three months' privilege leave combined with three months and seven days' furlough from the 3rd May to the 8th November.

Mr. R. R. Simpson was Inspector of Mines for No. 3 Circle until the 4th October and from the 3rd of May until the 4th October he took charge of No. 2 Circle in addition to his own duties. From the 5th October he was Inspector of Mines for No. 1 Circle, and from that date till the 8th November he officiated as Chief Inspector of Mines in India in addition to his own duties. He had one month's privilege leave from the 3rd April.

Mr. G. C. Leach was Inspector of Mines for No. 2 Circle. From the 3rd of May to the 4th October he had charge of No. 1 Circle. From the 5th October he had charge of No. 3 Circle in addition to his own duties.

I have the honour to be,

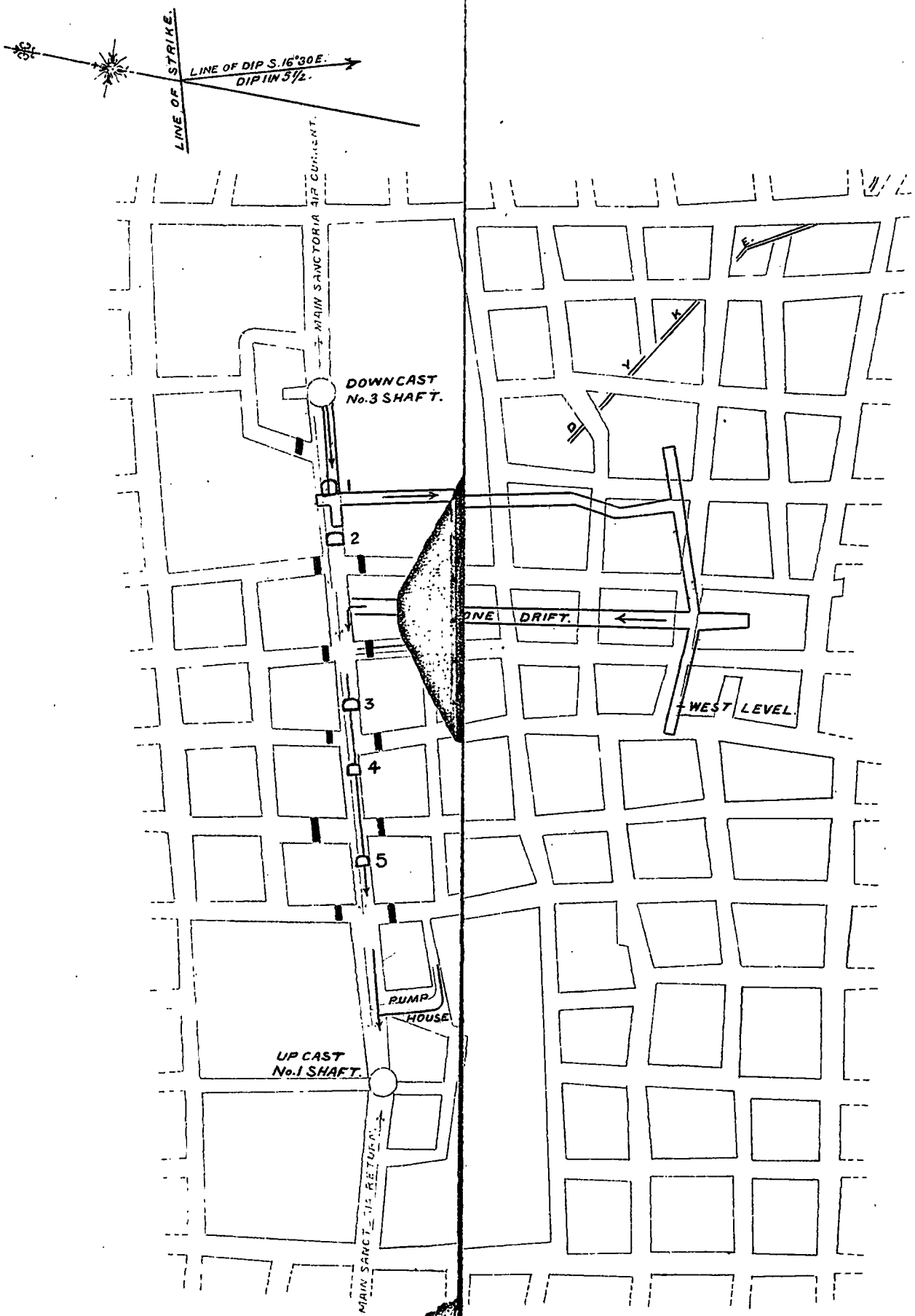
SIR,

Your most obedient servant,

G. F. ADAMS,

Chief Inspector of Mines in India.

PLAN ILLUSTRATING
DESHARG ARH EXPLOSION
Showing workings in Hatnol S eam and portion of the Sanctoria Seam
Scale 1 Inch = 100 Feet

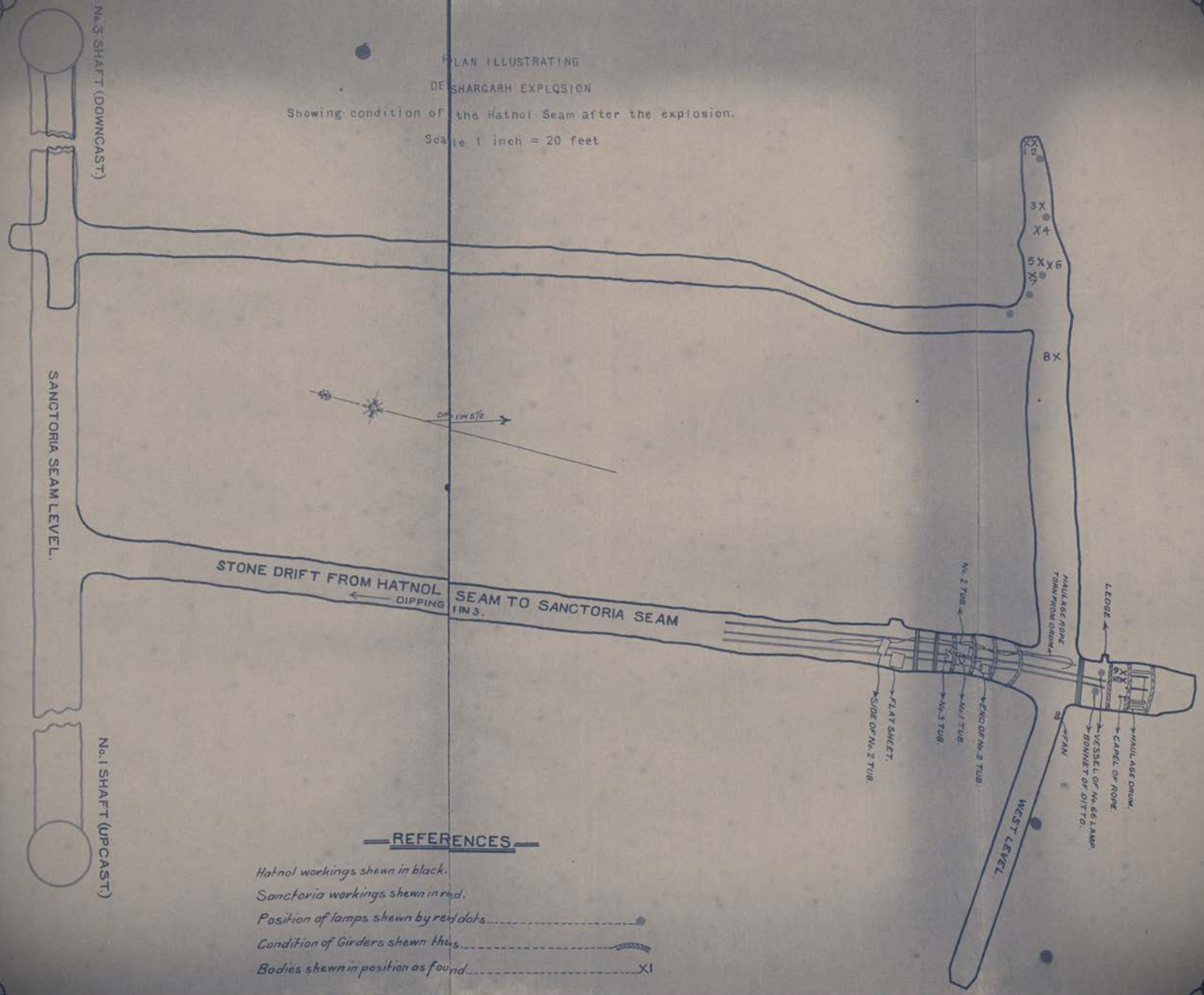


REFERENCES

Doors shewn thus.....D.
Stoppings shewn thus.....
Course of ventilation.....
Hatnol seam workings shewn in black.
Sanctoria seam workings shewn in red.

Reg. No. 3434 E., 11.—V.—1,500.

PLAN ILLUSTRATING
DESHARGARH EXPLOSION
Showing condition of the Hatnol Seam after the explosion.
Scale 1 inch = 20 feet



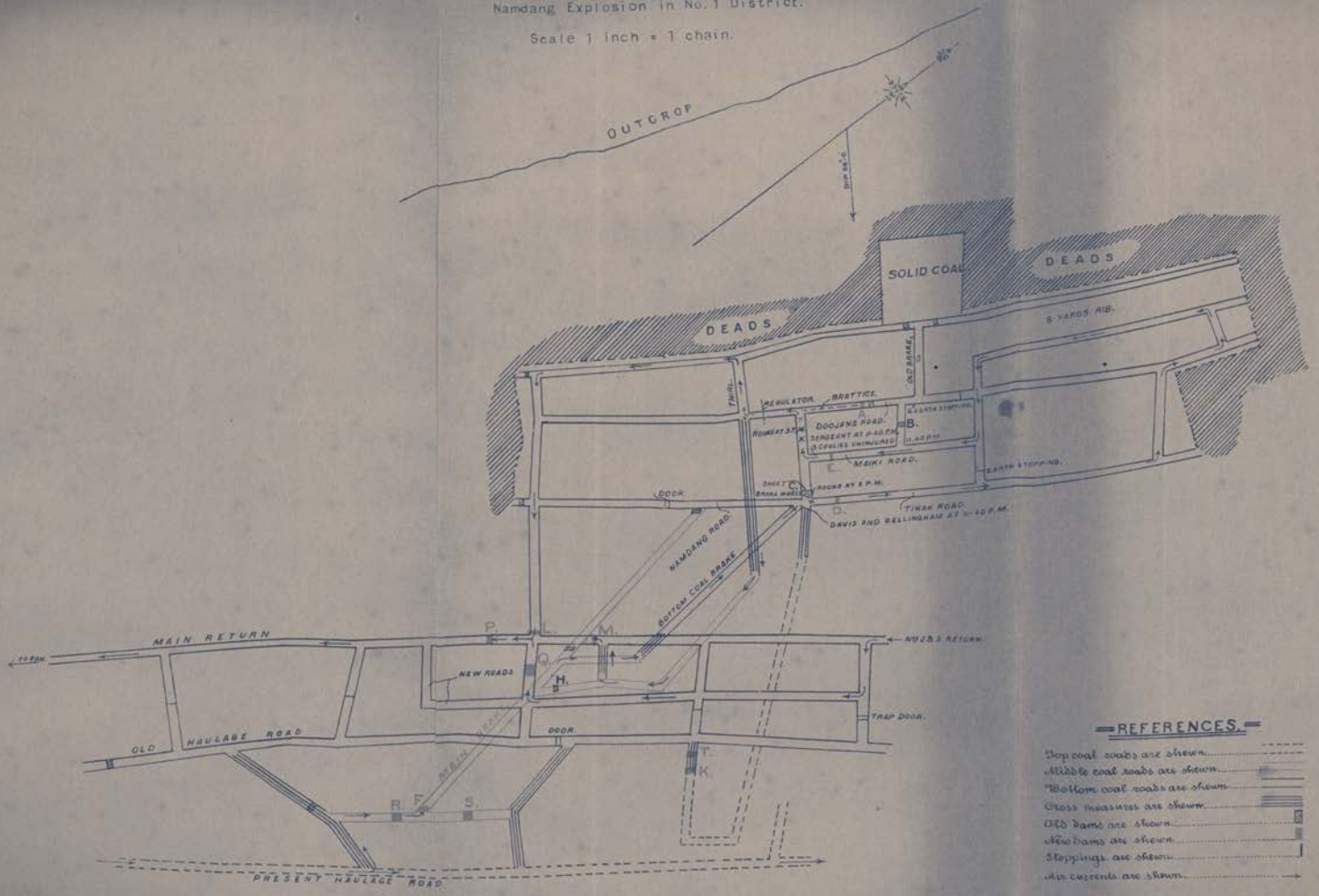
REFERENCES

Hatnol workings shewn in black.
Sanctoria workings shewn in red.
Position of lamps shewn by red dots.....
Condition of Girders shewn thus.....
Bodies shewn in position as found.....X1

PLAN ILLUSTRATING

Namdang Explosion in No. 1 District.

Scale 1 inch = 1 chain.



REFERENCES.

Top coal roads are shewn.....

Middle coal roads are shewn.....

Bottom coal roads are shewn.....

Cross measures are shewn.....

Old dams are shewn.....

New dams are shewn.....

Stoppings are shewn.....

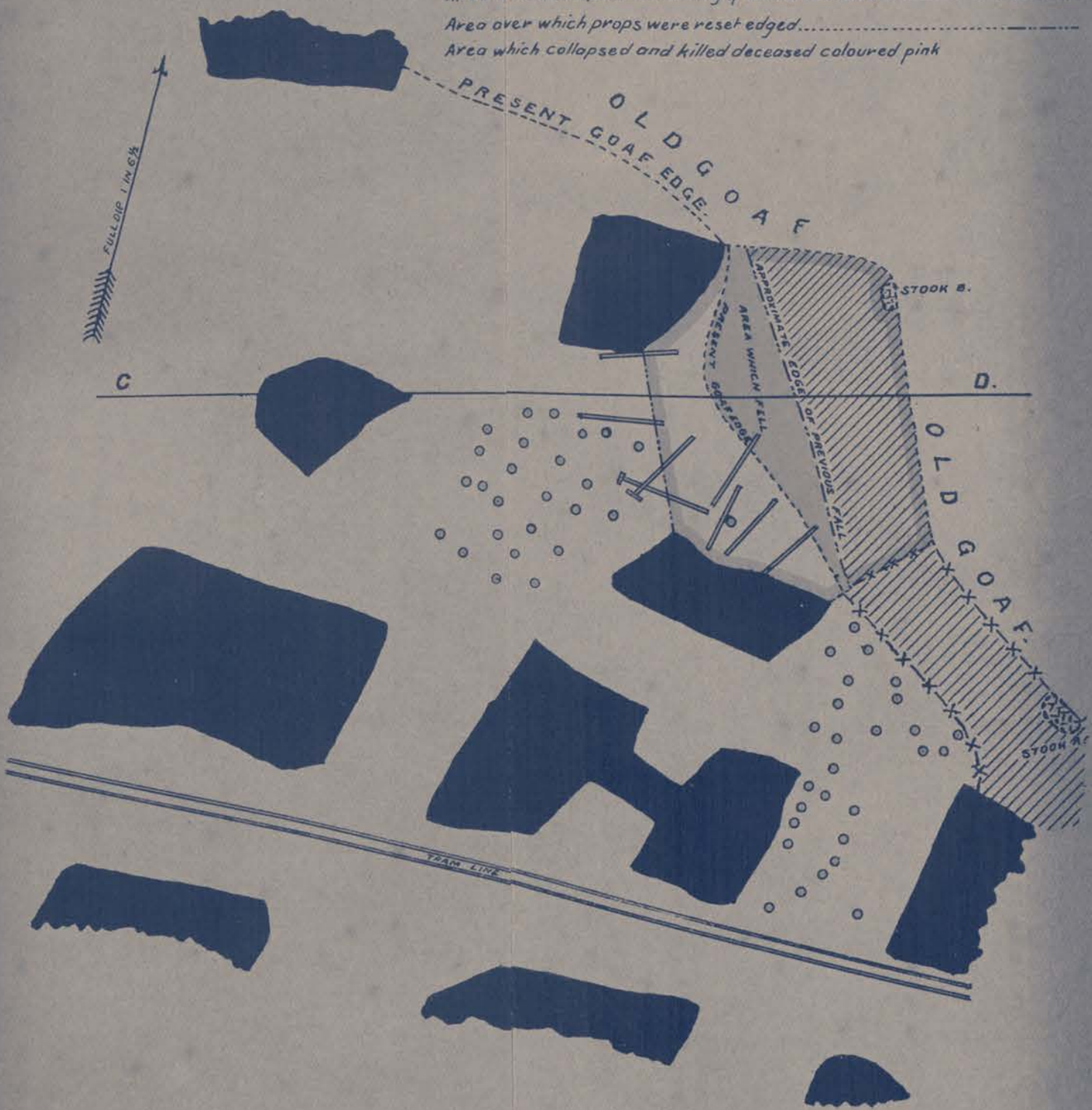
Air currents are shewn.....

PLAN ILLUSTRATING
ACCIDENT BY FALL OF ROOF
by which 12 persons were killed
at
the Bengal Coal Company Limited's Sitalpur Coal Mine

Scale 1 Inch = 20 Feet

REFERENCES.

Area from which props were drawn on evening of october 14th edged with pink
Area from which props were drawn on morning of october 15th edged.....
Area which collapsed on morning of october 15th shewn.....
Area over which props were reset edged.....
Area which collapsed and killed deceased coloured pink



SECTION ON C.D.

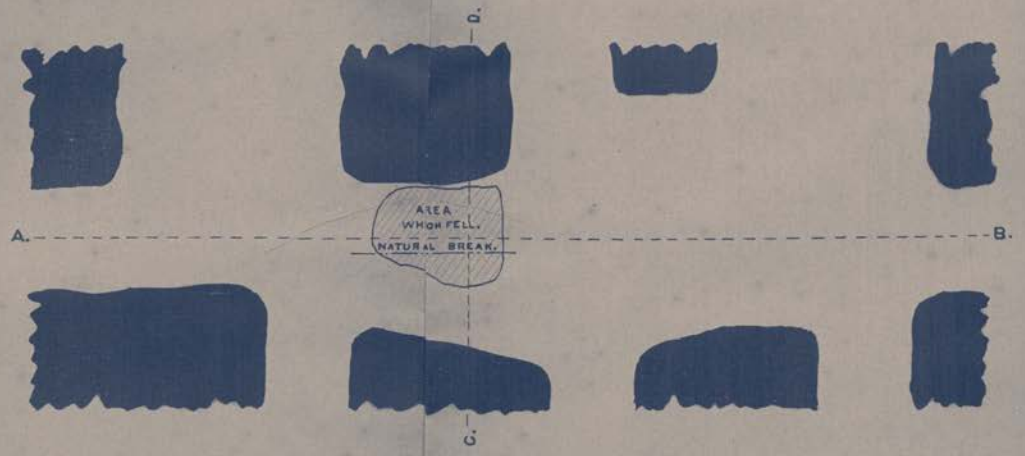
PLAN ILLUSTRATING

FATAL ACCIDENT BY FALL OF ROOF

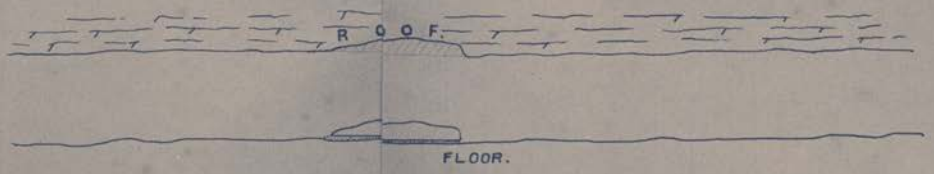
at

Royal Bengal Coal Company's Kusumkanali Coal Mine.

Scale 1 inch = 10 feet



= PLAN. =



= SECTION ON A.B. =

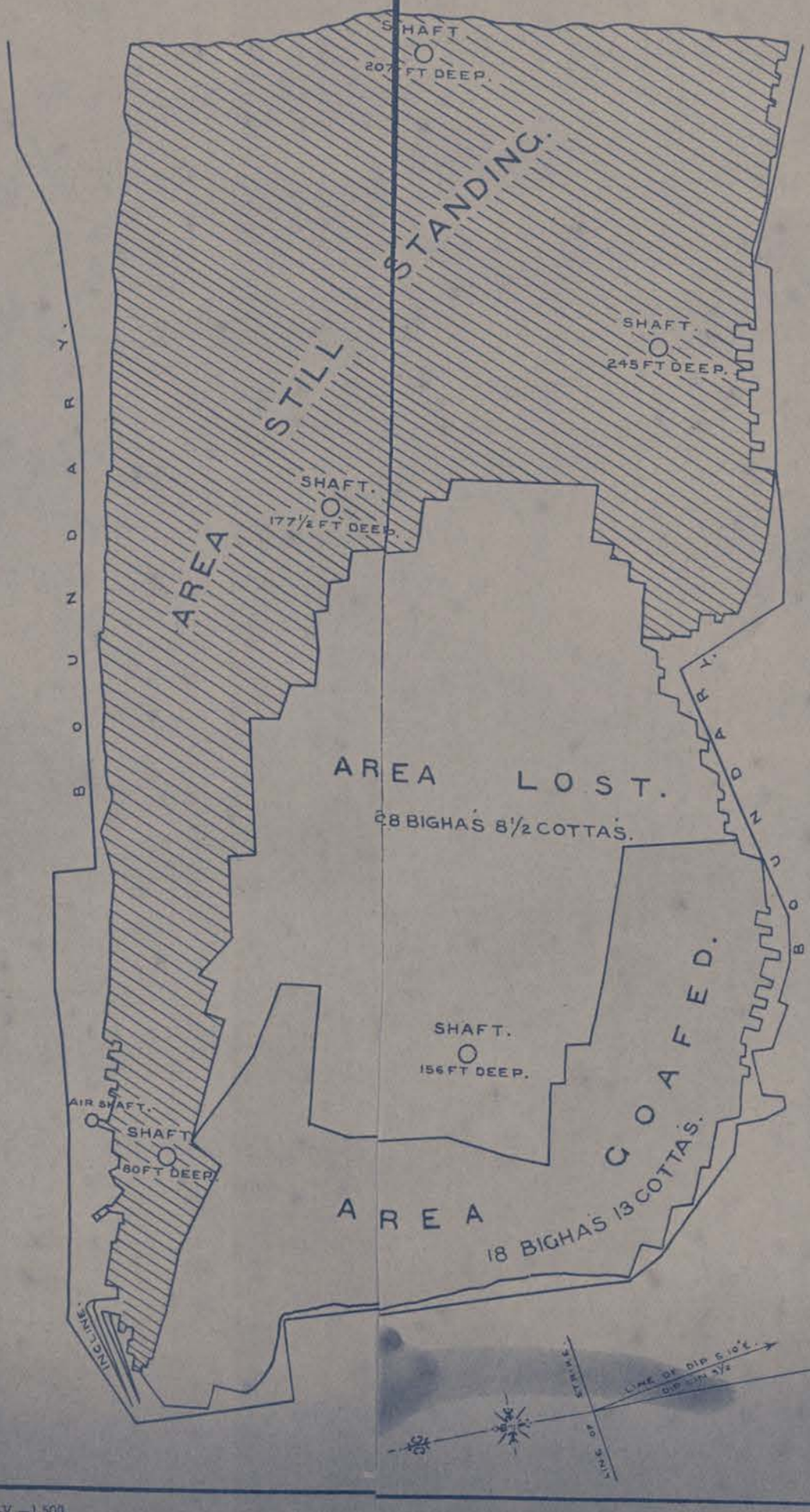
= SECTION ON C.D. =

Reg. No. 2334 B., II.—V.—1,500.

MINE PLAN

Showing area goafed and area lost where pillars have been left small and galleries have been made wide.

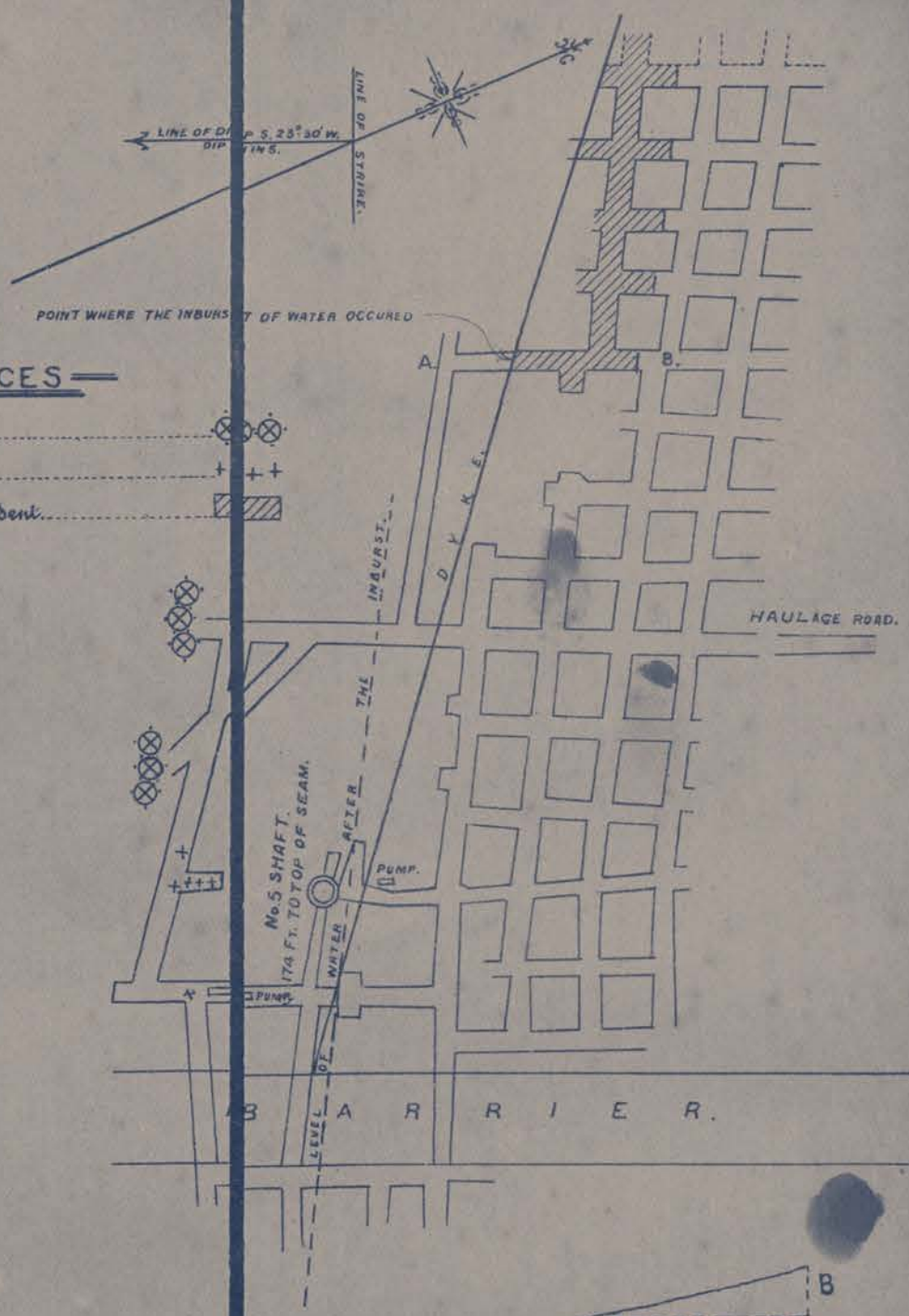
Scale 1 inch = 200 feet.



Reg No. 3334E. 11.—V.—1 500.

PLAN ILLUSTRATING
MURULIDIH COAL MINE INUNDATION

Scale 1 Inch = 100 Feet

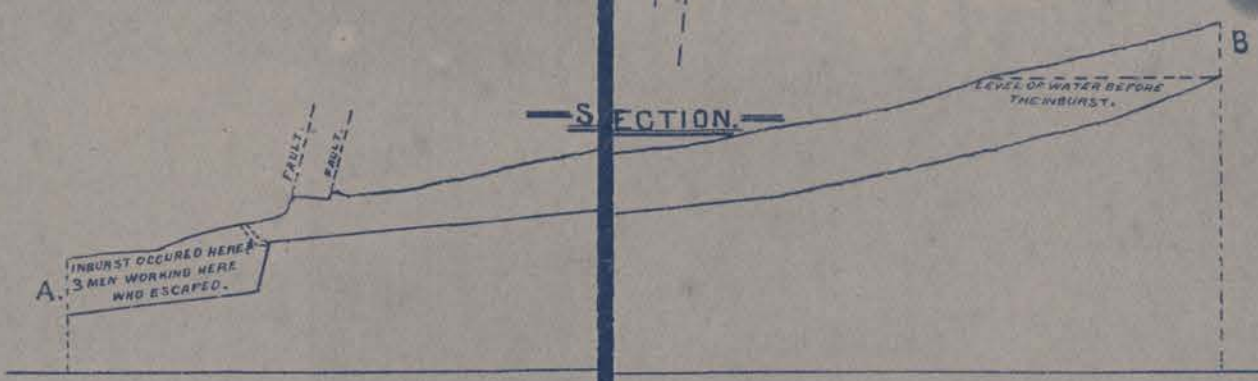


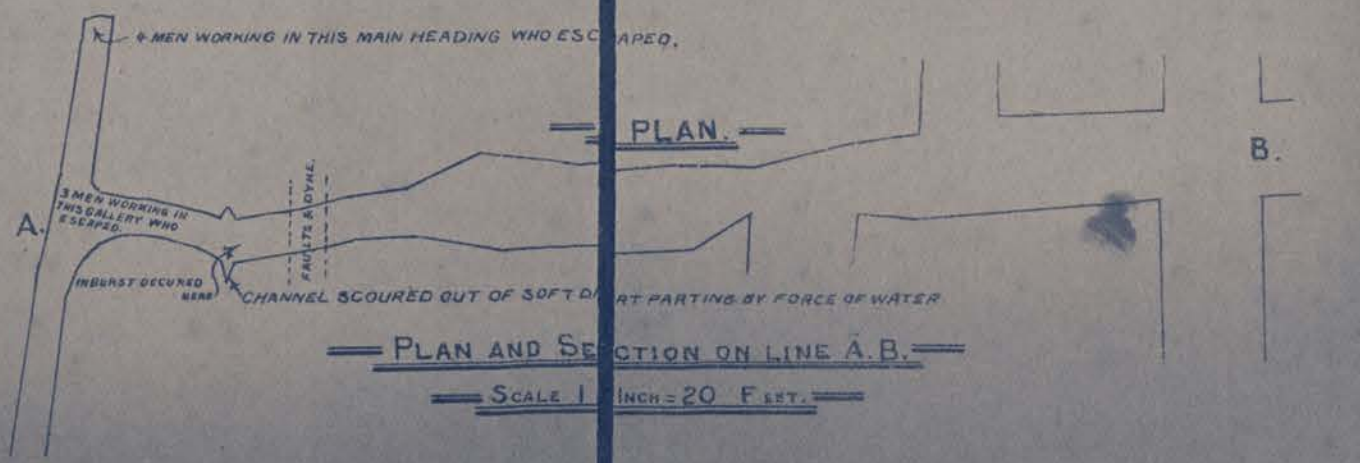
REFERENCES

Deceased were at work here.....

Bodies found here.....

Galleries full of water before accident.....




4 MEN WORKING IN THIS MAIN HEADING WHO ESCAPED.
PLAN.
B.
3 MEN WORKING IN THIS GALLERY WHO ESCAPED.
A.
FAULTS & DYKE.
INBURST OCCURED HERE
CHANNEL SCOURED OUT OF SOFT DIRT PARTING BY FORCE OF WATER

PLAN AND SECTION ON LINE A.B.

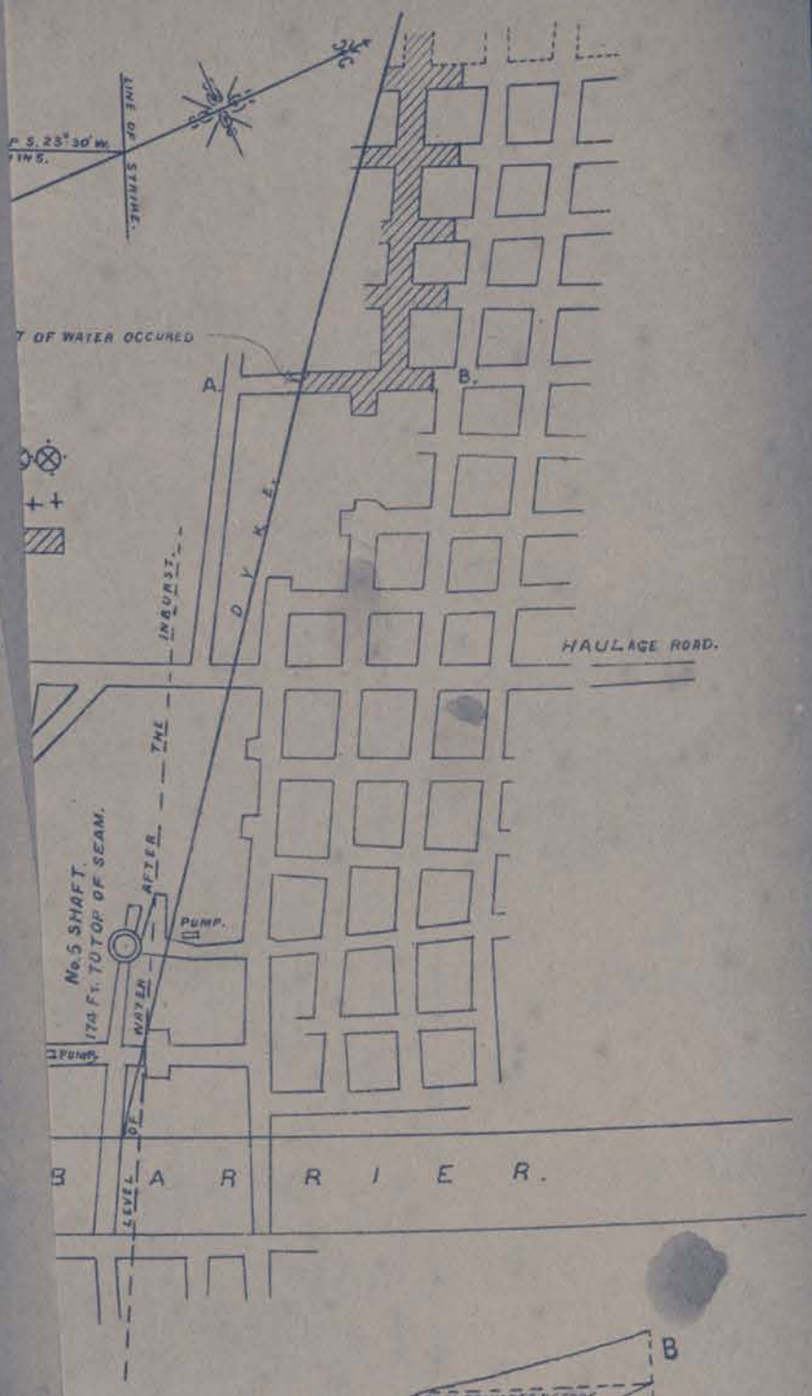
SCALE 1 INCH = 20 FEET.

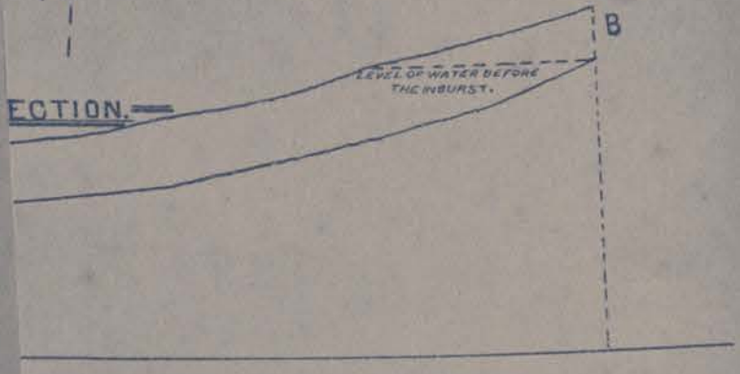
Reg. No 3340 E., II.—V.—1,000.

PLAN G.

ILLUSTRATING
OAL MINE INUNDATION

Inch = 100 Feet





ECTION.

APED.

PLAN.

B.

RT PARTING BY FORCE OF WATER.

CTION ON LINE A.B.

INCH = 20 FEET.

APPENDIX I.

STATISTICS OF MINES AND MINERALS.

Table No. 1.

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1910.

Province.	District and mineral field.		Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Total output.	Average number of persons employed daily in and about the mines.								Grand total below ground and above ground.
				Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		Below ground.				Above ground.				
									Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
								A.—COAL.									
								Tons.									
Bengal	Hazaribagh	Bokaro-Ramgarh	4	...	4	...	...	2,166	36	43	1	80	7	8	...	15	95
		Giridih	8	8	...	4	12	679,304	3,035	1,118	24	4,177	1,656	869	60	2,585	6,762
		Bokaro-Jharia	2	...	2	...	...	82	18	4	..	22	8	22	...	30	52
	Manbhum	Jharia	193	113	80	113	241	5,794,534	17,834	13,650	390	31,874	12,494	5,633	977	19.104	50,978
		Raniganj	49	12	37	31	51	473,332	2,488	990	9	3,487	1,158	517	39	1,714	5,201
	Bankura	„	1	...	1	1	1	4,098	19	16	...	35	1	2	...	3	38
	Sonthal Parganas	Raniganj	2	...	2	1	1	1,952	8	4	...	12	4	2	...	6	18
		Rajmahal	2	...	2	...	...	2,788	13	4	...	17	4	8	...	12	29
	Palamau, Daltonganj		1	1	...	1	3	84,996	162	160	14	336	184	36	41	261	597
	Birbhum, Raniganj		1	...	1	...	...	1,664	8	6	...	14	6	2	...	8	22
	Burdwan	„	154	138	16	127	236	3,731,560	15,510	6,959	139	22,608	7,580	3,776	298	11,654	34,262
	Sambalpur, Hingir-Rampur		1	1	...	...	...	830	54	...	...	54	160	...	...	160	214
		Total	418	273	145	278	545	10,777,306	39,185	22,954	577	62,716	23,262	10,875	1,415	35,552	98,268

STATISTICS OF MINES AND MINERALS—*contd.*

Table No. I—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1910.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Total output.	Average number of persons employed daily in and about the mines.								Grand total below ground and above ground.
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		Below ground.				Above ground.				
								Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
							A.—COAL—*contd.*									
							Tons.									
Central Provinces	Chhindwara, Pench Valley	2	2	...	3	3	87,677	402	246	12	660	65	29	11	105	765
	Narsinghpur, Mohpani	1	1	...	1	1	39,484	398	170	...	568	340	58	...	398	966
	Chanda, Ballarpur	1	1	...	1	4	93,276	536	...	...	536	152	...	...	152	688
	Total	4	4	...	5	8	220,437	1,336	416	12	1,764	557	87	11	655	2,419
Panjab	Jhelum	7	...	7	...	...	46,655	753	...	...	753	461	...	10	471	1,224
	Shahpur	1	...	1	...	...	650	319	...	...	319	83	...	...	83	402
	Mianwali	2	...	2	...	...	1,884	94	...	...	94	61	1	...	62	156
	Total	10	...	10	...	...	49,189	1,166	...	..	1,166	605	1	10	616	1,782
Eastern Bengal and Assam	Lakhimpur	6	5	1	4	6	297,094	918	284	...	1,202	423	249	37	709	1,911

Baluchistan	Sibi	3	1	2	3	16	43,428	566	...	...	566	299	...	26	325	891
	Loralai	1	...	1	...	...	172	6	...	...	6	3	...	...	3	9
	TOTAL	4	1	3	3	16	43,600	572	...	...	572	302	...	26	328	900
North-West Frontier Province.	Hazara	1	...	1	...	...	90	5	...	...	5	...	...	...	...	5
	GRAND TOTAL (COAL) FOR 1910.	443	283	160	290	575	11,387,716	43,182	23,654	589	67,425	25,149	11,212	1,498	37,860	105,285
	" " OF PRECEDING YEAR.	511	214	297	371	712	11,294,227	44,549	24,660	685	69,894	25,460	12,311	1,626	39,397	109,291
	DIFFERENCE	—68	+69	—137	—81	—137	+93,489	—1,367	—1,006	—96	—2,469	—311	—1,099	—127	—1,537	—4,006
							B.—MICA. Cwts.									
Bengal	Monghyr	5	...	5	3	3	543	75	90	22	187	16	55	42	113	300
	Hazaribagh	136	...	136	73	77	12,917	3,599	1,454	62	5,115	1,331	1,519	1,093	3,943	9,058
	Gaya	27	...	27	16	16	4,366	508	242	70	820	103	137	163	403	1,223
	TOTAL	168	...	168	92	96	17,826	4,182	1,786	154	6,122	1,450	1,711	1,298	4,459	10,581
Madras	Nellore	52	7	45	42	42	3,336	945	725	93	1,763	310	315	332	957	2,720
Rajputana	Ajmer-Merwara	7	...	7	...	...	213	80	3	...	83	68	40	9	117	200
	GRAND TOTAL (MICA) FOR 1910.	227	7	220	134	138	21,375	5,207	2,514	247	7,968	1,828	2,066	1,639	5,533	13,501
	" " OF PRECEDING YEAR.	172	...	172	72	80	32,011	3,723	2,114	272	6,109	1,274	1,381	1,101	3,756	9,865
	DIFFERENCE	+55	+7	+48	+62	+58	—10,636	+1,484	+400	—25	+1,859	+554	+685	+538	+1,777	+3,636

STATISTICS OF MINES AND MINERALS—*contd.*

Table No. I—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1910.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Total output.	Average number of persons employed daily in and about the mines.								Grand total below ground and above ground.
								Below ground.				Above ground.				
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
							C.—MANGANESE.									
							Tons.									
Central Provinces	Nagpur	15	2	13	...	...	162,850	1,623	1,206	...	2,829	442	202	10	654	3,483
	Bhandara	4	...	4	...	...	79,611	252	142	...	394	683	494	10	1,187	1,581
	Balaghat	6	...	6	...	...	131,776	1,493	482	53	2,028	294	119	18	431	2,459
	Chhindwara	4	1	3	...	...	19,531	134	120	...	254	209	103	...	312	566
	Total	29	3	26	...	...	393,768	3,502	1,950	53	5,505	1,628	918	38	2,584	8,089
Madras	Vizagapatam	8	2	6	2	3	43,980	1,074	669	...	1,743	311	186	85	582	2,325
Bombay	Panch Mahals	3	2	1	2	5	30,396	219	92	25	336	350	126	41	517	853
	Ratnagiri	1	...	1	...	...	525	8	9	...	17	22	31	10	63	80
	GRAND TOTAL (Manganese) for 1910.	41	7	34	4	8	468,669	4,803	2,720	78	7,601	2,311	1,261	174	3,746	11,347
	„ „ of preceding year.	37	1	36	10	12	357,205	5,012	2,891	83	7,986	1,705	964	140	2,809	10,795
	Difference	+4	+6	−2	−6	−4	+111,464	−209	−171	−5	−385	+606	+297	+34	+937	+552

D.—LIMESTONE.

							Tons.									
Central Provinces . .	Jabalpur, Katni . . .	18	1	17	...	...	80,658	694	818	33	1,545	290	537	48	875	2,420
Panjab	Hoshiarpur	1	...	1	...	...	600	40	...	...	40	50	...	...	50	90
	GRAND TOTAL (LIMESTONE) FOR 1910.	19	1	18	...	...	81,258	734	818	33	1,585	340	537	48	925	2,510
	„ „ OF PRECEDING YEAR.	21	...	21	16	23	56,502	1,075	1,413	64	2,552	610	562	75	1,247	3,799
	DIFFERENCE . . .	—2	+1	—3	—16	—23	+24,756	—341	—595	—31	—967	—270	—25	—27	—322	—1,289

E.—SALT.

							Tons.									
Panjab	Shahpur . . .	1	...	1	...	...	6,151	32	35	5	72	...	...	...	...	72
	Jhelum	2	...	2	...	...	102,263	381	354	54	789	31	...	...	31	820
	Mianwali	1	...	1	...	...	11,453	66	...	...	66	...	...	...	...	66
	GRAND TOTAL (SALT) FOR 1910.	4	...	4	...	...	119,867	479	389	59	927	31	...	...	31	958
	„ OF PRECEDING YEAR	4	...	4	2	4	126,987	524	432	64	1,020	41	...	...	41	1,061
	DIFFERENCE . . .	...	...	...	—2	—4	—7,120	—45	—43	—5	—93	—10	...	...	—10	—103

STATISTICS OF MINES AND MINERALS—*contd.*

Table No. I—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1910.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Total Output.	Average number of persons employed daily in and about the mines.								Grand total below ground and above ground.
								Below ground.				Above ground.				
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
							F.—GEMS.									
							Carats.									
Burma	Mogok (Rubies, etc.) . .	5	5	...	1	1	262,019	626	...	...	626	837	...	...	837	1,463
Madras	Kurnool (Diamonds) . .	2	...	2	...	...	13	11	4	...	15	5	12	7	24	39
	GRAND TOTAL (Gems) for 1910.	7	5	2	1	1	262,032	637	4	...	641	842	12	7	861	1,502
	„ of preceding year	1	1	...	...	...	265,010	652	...	...	652	733	...	...	733	1,385
	Difference . . .	+6	+4	+2	+1	+1	—2,978	—15	+4	...	—11	+109	+12	+7	+128	+117

G.—SLATE.																	
							Tons.										
Bengal	Monghyr	6	...	6	4	8	1,300	68	49	...	117	46	7	...	53	170
Panjab	Kangra	2	...	2	2	2	3,750	85	...	...	85	125	27	38	190	275
	Gurgaon	3	...	3	2	2	1,857	39	...	26	65	100	...	7	107	172
	TOTAL	5	...	5	4	4	5,607	124	...	26	150	225	27	45	297	447
	GRAND TOTAL (SLATE) FOR 1910.	11	...	11	8	12	6,907	192	49	26	267	271	34	45	350	617
	,, ,, OF PRECEDING YEAR.	11	...	11	14	14	7,054	263	73	30	366	278	30	48	356	722
	DIFFERENCE	...	...	...	—6	—2	—147	—71	—24	—4	—99	—7	+4	—3	—6	—105
H.—GOLD.																	
							Troy ozs.										
Bombay	Dharwar	1	1	...	...	...	737	13	...	...	13	256	68	...	324	337
Madras	Anantapur	3	3	...	3	3	2,532	623	...	...	623	447	79	37	563	1,186
	GRAND TOTAL (GOLD) FOR 1910	4	4	...	3	3	3,269	636	...	...	636	703	147	37	887	1,523
	,, OF PRECEDING YEAR	8	8	...	8	14	5,615	1,454	...	1	1,455	711	105	78	894	2,349
	DIFFERENCE	—4	—4	...	—5	—11	—2,346	—818	...	—1	—819	—8	+42	—41	—7	—826
I.—IRON.																	
							Tons.										
Bengal	Singhbhum	6	...	6	...	...	17,646	110	210	...	320	110	211	...	321	641
	TOTAL of preceding year	5	...	5	...	...	15,214	...	...	...	...	190	363	...	553	553
	DIFFERENCE	+1	...	+1	...	...	+2,432	+110	+210	...	+320	—80	—152	...	—232	+88

STATISTICS OF MINES AND MINERALS—*contd.*

Table No. 1—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1910.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Total Output.	Average number of persons employed daily in and about the mines.								Grand total below ground and above ground.
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		Below ground.				Above ground.				
								Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
					J.—WOLFRAMITE.		Cwts.									
Central Provinces . .	Nagpur	1	...	1	...	...	18	41	25	...	66	11	16	...	27	93
	Total of preceding year .	2	...	2	...	...	144	40	8	...	48	30	7	..	37	85
	Difference . . .	−1	...	−1	...	...	−126	+1	+17	...	+18	−19	+9	...	−10	+8
					K.—MAGNESITE.		Tons.									
Madras	Salem	1	...	1	1	1	5,182	250	200	350	800	50	...	50	100	900
	Total of preceding year .	1	...	1	...	...	737	23	19	26	68	26	20	35	81	149
	Difference . . .	...	...	...	+1	+1	+4,445	+227	+181	+324	+732	+24	−20	+15	19	+751
					L.—CHROMITE.		Cwts.									
Baluchistan . . .	Quetta-Pishin . . .	4	1	3	...	...	6,440	8	...	...	8	...	...	...	...	8
	Total of preceding year .	2	...	2	...	...	10,122	6	...	...	6	10	...	...	10	16
	Difference . . .	+2	+1	+1	...	...	−3,682	+2	...	...	+2	−10	..	...	−10	−8

							M.—COPPER ORE.										
							Tons.										
Bengal	Singhbhum	1	1	...	...	...	864	80	...	...	80	1,600	1,040	120	2,760	2,840
	TOTAL of preceding year	2	2	...	1	1	7	180	...	...	180	113	52	10	175	355
	DIFFERENCE	—1	—1	...	—1	—1	+857	—100	...	...	—100	+1,487	+988	+110	+2,585	2,485
							N.—FULLER'S EARTH.										
							Tons.										
Central Provinces	Jabalpur	1	...	1	...	...	84	...	...	...	...	...	...	...	...	*
	TOTAL of preceding year	1	...	1	1	1	97	...	...	...	...	...	...	...	...	...
	DIFFERENCE	...	...	...	—1	—1	—13	...	...	...	...	...	...	..	...	...
							O.—CLAY.										
							Tons.										
Central Provinces	Jabalpur	3	...	3	...	...	15,223	29	57	...	86	20	6	...	26	112
	TOTAL of preceding year	1	...	1	...	...	10,214	16	36	...	52	24	8	...	32	84
	DIFFERENCE	+2	...	+2		...	+5,009	+13	+21	...	+34	—4	—2	...	—6	+28
							P.—GALENA.										
							Tons.										
Burma	Mandalay	1	...	1	...	...	23	1,270	...	...	1,270	635	716	...	1,351	2,621
	TOTAL of preceding year	1	...	1	...	...	2	4	...	...	4	4	...	...	4	8
	DIFFERENCE	...	...	...	...	...	+21	+1,266	...	...	+1,266	+631	+716	...	+1,347	+2,613

* Figures included with that of Limestone.

STATISTICS OF MINES AND MINERALS—*concld.*

Table No. 1—*concld.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1910.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines: Worked by mechanical power.	Number of mines: Not worked by mechanical power.	Number of mines inspected during the year: Number of mines inspected.	Number of mines inspected during the year: Number of inspections.	Total Output.	Average number of persons employed daily in and about the mines: Below ground: Adult males.	Below ground: Adult females.	Below ground: Children (under 12).	Below ground: Total below ground.	Above ground: Adult males.	Above ground: Adult females.	Above ground: Children (under 12).	Above ground: Total above ground.	Grand total below ground and above ground.
							Q.—TIN.									
							Cwts.									
Bengal	Hazaribagh	1	...	1	...	...	3	7	...	...	7	4	...	...	4	11
Burma	Maliwan	1	1	...	...	...	1,100	20	...	...	20	40	...	...	40	60
	Total (Tin) for 1910	2	1	1	...	...	1,103	27	...	...	27	44	...	...	44	71
	Total of preceding year	1	...	1	...	...	1,520	47	...	...	47	40	...	...	40	87
	Difference	+1	+1	...	...	...	—417	—20	...	...	—20	+4	...	...	+4	—16
							R.—STEATITE.									
							Cwts.									
Central Provinces	Jabalpur	3	...	3	...	...	3,068	32	17	...	49	31	30	...	61	110
Madras	Kurnool	1	...	1	1	1	400	4	3	...	7	...	...	3	3	10
	Total (Steatite) for 1910	4	...	4	1	1	3,468	36	20	...	56	31	30	3	64	120
	Total of preceding year	3	...	3	...	...	11,296	25	15	...	40	28	18	...	46	86
	Difference	+1	...	+1	+1	+1	—7,828	+11	+5	...	+16	+3	+12	+3	+18	+34

							S.—GRAPHITE.									
Madras	Vizagapatam . . .	1	...	1	...	...	Cwts. 5,171	11	4	...	15	5	11	...	16	31
	TOTAL of preceding year .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	DIFFERENCE . . .	+1	...	+1	...	...	+5,171	+11	+4	...	+15	+5	+11	...	+16	+31
							T.—BAUXITE.									
Central Provinces . .	Jabalpur	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	TOTAL of preceding year .	1	...	1	...	...	Tons. 32	11	5	...	16	4	...	...	4	20
	DIFFERENCE . . .	—1	...	—1	...	...	—32	—11	—5	...	—16	—4	...	...	—4	—20
	GRAND TOTAL (ALL MINERALS).	781	310	471	442	739	Tons. 12,103,439 Cwts. 37,575 Ounces. 3,269 Carats. 262,032	57,732	30,664	1,382	89,778	33,981	17,299	3,622	54,902	144,680
	GRAND TOTAL OF PRECEDING YEAR.	785	226	559	495		Tons. 11,868,278 Cwts. 55,093 Ounces. 5,615 Carats. 265,010	57,604	31,666	1,225	90,495	31,281	15,821	3,113	50,215	140,710
	DIFFERENCE. . .	—4	+84	—88	—53	—122	Tons. +235,161 Cwts. —17,518 Ounces. —2,346 Carats. —2,978	+128	—1,002	+157	—717	+2,700	+1,478	+509	+4,687	+3,970

APPENDIX I—*contd.*

Table No. 2.

Number of mines opened and closed during the year ending 31st December 1910.

Province.	District.	Number of mines opened.	Number of mines closed.
	A.—COAL.		
Bengal	Hazaribagh — Bokaro-Ramgarh	1	3
	Hazaribagh — Giridih	...	3
	Manbhum — Jharia	11	14
	Manbhum — Raniganj	7	10
	Burdwan, Raniganj	6	17
	Bankura „	1	...
	Sonthal Parganas, Raniganj	...	1
Total		26	48
Panjab	Jhelum	3	2
	Mianwali	1	1
Total		4	3
Baluchistan	Sibi, Khost	2	...
Burma	Chhindwin	...	1
Total (Coal)		32	52
	B.—MICA.		
Bengal	Hazaribagh	80	63
Madras	Nellore	6	30
Rajputana	Ajmer-Merwara	1	2
Total (Mica)		87	95
	C.—MANGANESE.		
Bombay	Ratnagiri	1	1
Central Provinces	Nagpur	1	1
	Chhindwara	1	...
Total		2	1
Madras	Vizagapatam	1	...
Total (Manganese)		4	2

APPENDIX I—*contd.*

Table No. 2—*concld.*

Number of mines opened and closed during the year ending 31st December 1910.

Province.	District.	Number of mines opened.	Number of mines closed.
	D.—LIMESTONE.		
Central Provinces	Jabalpur	4	1
Panjab	Hoshiarpur	1	1
Total (Limestone)		5	2
	E.—SALT.		
Panjab	Jhelum	1	...
	F.—GEMS.		
Madras	Kurnool	2	2
	G.—TIN.		
Bengal	Hazaribagh	1	1
	H.—STEATITE.		
Central Provinces	Jabalpur	1	1
Madras	Kurnool	1	1
Total (Steatite)		2	2
	I.—GRAPHITE.		
Madras	Vizagapatam	1	...
GRAND TOTAL		135	156

APPENDIX I—*contd.*

Table No. 3.

List of plans of abandoned and discontinued mines received during the year 1910.

Registered number.	Name and situation of mine.	Name and number of seam.	Name of mineral worked.	Name of owner.	Date of abandonment or discontinuance.
81	Chota Dhemo Mine, Dishargarh P. O.	Dishargarh Seam . .	Coal .	Chota Dhemo Coal Co. .	October 1908.
82	Loyabad Mine, Bansjora P. O.	No. 17 Seam . . .	Coal .	Barakar Coal Co., Ld. .	20th March 1909.
83	Pandakanali Mine, Bansjora P. O.	No. 17 Seam . .	Coal .	Pandakanali Coal Co., Ld.	25th August 1909.
84	South Bhuputdih Mine, Katrasgarh P. O.	No. 10 Seam . . .	Coal .	Katras Bhuputdih Coal Co.	9th May 1909.
85	Koniapur Mine, Sitarampur P. O.	Dishargarh Seam . .	Coal .	Lutchipur Coal Co., Ld. .	15th November 1909.
86	Mugma Mine, Nirshachatti P. O.	.....	Coal .	I. N. Chandra and Sons .	1st November 1909.
87	No. 2, Pathordih Shaft and Dandidih Incline. Serampur Colliery, Giridih P. O.	Kurhurbari Lower Seam .	Coal .	East Indian Railway Co..	31st March 1909.
88	Sunpur Mine, Chora P. O.	Sunpur Seam . .	Coal .	Ondal Coal Co., Ld. .	June 1909.
89	Bowlah Mine, Chora P. O.	Bowlah Seam . .	Coal .	Ondal Coal Co., Ld. .	April 1909.
90	Ghusik Mine, Kalipahari P. O.	Ghusik Seam . .	Coal .	Ghusik and Muslia Collieries, Ld.	June 1909.
91	Egarcoor Quarry, Barakar P. O.	Seam unknown	Coal .	Ahmed Yusuf . .	July 1908.
92	Ketherdih Quarry, Mugma P. O.	Ketherdih Seam . .	Coal .	Kunja Behari Ghosh .	January 1909.
93	Chandore Mine, Katrasgarh P. O.	Nos. 8 and 7 Seams . .	Coal .	Chandore Coal Co. . .	15th August 1909.
94	Angarpatra Mine, Katrasgarh P. O.	No. 13 Seam . . .	Coal .	Trigunait Brothers .	27th January 1909.
95	Hariladih Mine, Jharia P. O.	No. 16 Seam . . .	Coal .	Standard Coal Co., Ld. .	25th October 1909.
96	Sijua Mine, Sijua P. O.	No. 16 Seam . . .	Coal .	Sijua Coal Co., Ld. . .	15th December 1909.
97	Pipratand Mine, Katrasgarh P. O.	Top, Middle and Lower of Murulidih Basin.	Coal .	Pipratand Coal Co., Ld. .	26th November 1909.
98	Mandra Khas Mine, Nowagarh P. O.	...	Coal	Gour Mohun Singh .	...
99	Mandra Mine, Nowagarh P. O.	...	Coal .	Mouji Jiva . . .	...
100	Basantipur Mine, Chowkidanga.	Mamudpur Seam . .	Coal	Basanti Oakdene Coal Co.	8th December 1909.
101	Jogta Mine, Sijua P. O.	No. 13 Seam . . .	Coal .	Agabeg Brothers . .	13th March 1910.
102	Nuniapool Mine, Kalipahari P. O.	Dobalia Seam . .	Coal .	Meyer Coal Co. . .	15th June 1909.
103	Jubilee Mine, Kalipahari P. O.	Bhutdoba Top Seam .	Coal .	Meyer Coal Co. . .	19th June 1909.
104	Nudkhurki Mine, Nos. 11, 12, 13 and 14 Inclines. Nos. 8, 9 and 10 Inclines. Nowagarh P. O.	No. 8 Seam. No. 10 Seam.	Coal .	Nudkhurki Coal Co. .	January 1910.

APPENDIX I—*contd.*

Table No. 3—*contd.*

List of plans of abandoned and discontinued mines received during the year 1910.

Registered number.	Name and situation of mine.	Name and number of seam.	Name of mineral worked.	Name of owner.	Date of abandonment or discontinuance.
105	Sanctoria Mine, Dishargarh P. O.	Sanctoria Seam .	Coal	Bengal Coal Co., Ld. .	1st April 1910.
106	Gondodih Mine, Kusunda P. O.	Nos. 8, 9, and 10 Seams .	Coal .	Raniganj Coal Association, Ld.	1st June 1909.
107	Busserya Mine, Kusunda P. O.	Nos. 10 and 11 Seams	Coal .	Busserya Coal Co., Ld.	21st March 1909.
108	Koolustore Mine, Chowkidanga P. O.	Toposi Seam . . .	Coal .	Koolustore Coal Co., Ld. .	3rd May 1910.
109	Katras Mine, Katrasgarh P. O.	No. 11 Seam . . .	Coal .	Nowagarh Coal Co., Ld. .	20th March 1909.
110	Kessabganj Mine, Kalipahari P. O .	Kessabganj Seam . .	Coal .	G. M. Agreeable Coal Co. .	6th June 1909.
111	Banksimulla Mine, Charanpur P. O.	Sibpur Seam . . .	Coal .	Bengal Coal Co., Ld. .	26th June 1910.
112	Mudidih Mine, Sijua P. O.	Nos. 10, 11, and 12 Seams	Coal .	Reliance Coal Co., Ld. .	No. 0 Seam—Unknown. No. 11 Seam—March 1909. No. 12 Seam—April 1910.
113	Upper Kandra Mine, Bhujudih P. O.	Nos. 11 and 12 Seams .	Coal .	South Jharia Coal Co. .	...
114	Domohani Mine, Kurhurbari Colliery, Giridih P. O.	Kurhurbari Lower Seam	Coal .	East Indian Railway Co. .	December 1909.
115	Egarcoor Mine, Chirkunda P. O.	Egarcoor Lower Seam .	Coal .	Egarcoor Coal Association	February 1910.
116	Nimtala Mine, Kurhurbari Colliery, Giridih P. O.	Kurhurbari Bottom Seam	Coal .	East Indian Railway Co. .	March 1909.
117	Ramnadih Mine, Kurhurbari Colliery, Giridih P. O.	Kurhurbari Lower Seam .	Coal .	East Indian Railway Co.	October 1909.
118	New Chandore Mine, Katrasgarh P. O.	Nos. 6 and 7 Seams .	Coal .	S. Trigunait . .	March 1909.
119	Koradih Mine, Katrasgarh P. O.	Seam unknown .	Coal .	C. M. & Co. . . .	July 1909.
120	No. 2 Incline Mine, Kurhurbari Colliery, Giridih P. O.	Kurhurbari Lower Seam .	Coal .	East Indian Railway Co.	November 1909.
121	Morichkotta Mine, Sitarampur P. O.	Dishargarh Seam . .	Coal .	Sudihi Coal Co., Ld. .	April 1910.
122	Bamundiha Mine, Sitarampur P. O.	Dishargarh Seam . .	Coal .	Damuda Coal Co., Ld. .	30th June 1910.
123	Bandarchooa Mine, Nirshachatti P. O.	Bandarchooa Top and Bottom Seams.	Coal .	Friends Coal Co. .	22nd October 1909.
124	Titulmuri Mine, Sijua P. O.	No. 10 Seam . . .	Coal .	Titulmuri Coal Co., Ld.	31st May 1909.
125	Ekra Khas Mine, Bansjora P. O.	Nos. 11 and 15 Seams .	Coal .	Maharaja M. C. Nandi .	June 1910.
126	Kankani Mine, Bansjora P. O.	No. 16 Seam . . .	Coal .	Eastern Coal Co., Ld. .	February 1910.
127	Baraboni Mine, Asansol P. O	Bottom Seam (Sanctoria ?)	Coal .	Baraboni Coal Concern, Ld.	21st June 1910.

APPENDIX I—*contd.*

Table No. 3—*concld.*

List of plans of abandoned and discontinued mines received during the year 1910.

Registered number.	Name and situation of mine.	Name and number of seam.	Name of mineral worked.	Name of owner.	Date of abandonment or discontinuance.
128	Vanora Mine, Charanpur P. O.	Top Seam . .	Coal	Maharaja M. C. Nandi .	17th August 1909.
129	Egarcoor Mine, Chirkunda P. O.	Egarcoor Seam . .	Coal .	New Chirkunda Coal Co. .	May 1910.
130	Gangutia Mine, Dishargarh P. O.	Hatnol Seam . .	Coal .	Bengal Nagpur Coal Co., Ld.	April 1909.
131	Jamgram Mine, Panuria P. O.	33 feet Seam .	Coal .	Barakar Coal Co., Ld.	December 1909.

Table No. 4.

The following table shows the fluctuations in the output of the principal minerals raised from mines classed under the Indian Mines Act, 1901. The other minerals raised are gems, slate, gold, iron ore, magnesite, chromite, copper ore, tin, steatite, graphite, fuller's earth, clay, galena and wolframite.

Year.	Coal.	Manganese.	Mica.	Limestone.	Salt.
	Tons.	Tons.	Cwts.	Tons.	Tons.
1901 . . .	6,251,522	162,057	19,900	28,000	90,242
1902 . . .	6,790,507	144,037	21,360	30,091	87,361
1903 . . .	6,812,725	171,223	20,100	35,238	90,667
1904 . . .	7,561,338	138,733	21,320	50,847	107,413
1905 . . .	7,770,471	204,194	25,548	93,170	94,078
1906 . . .	9,112,663	436,442	50,438	48,836	118,023
1907 . . .	10,526,468	642,082	44,919	73,222	101,703
1908 . . .	12,149,020	494,942	46,208	101,569	93,779
1909 . . .	11,294,227	357,205	32,011	56,502	126,987
1910 . . .	11,387,716	468,669	21,375	81,258	119,867

APPENDIX I—*contd.*

Table No. 5.

The following table shows the amount of coal raised, the average number of persons working daily and the death-rates during the years 1901 to 1910 in respect of coal mines under the Indian Mines Act, 1901.

Year.	Amount of coal raised.	Average number of persons working daily below and above ground.	Number of deaths below and above ground.	Death-rates.	
				Per 1,000,000 tons raised.	Per 1,000 persons working daily below and above ground.
1901 . . .	6,251,522	85,361	58	9·28	·67
1902 . . .	6,790,507	89,503	59	8·69	·66
1903 . . .	6,812,725	79,561	67	9·83	·84
1904 . .	7,561,338	82,002	55	7·27	·67
1905 . . .	7,770,471	79,506	58	7·46	·72
1906 . .	9,112,663	90,159	80	8·78	·89
1907 . . .	10,526,468	102,689	89	8·45	·86
1908 . . .	12,149,020	120,107	164	13·49	1·36
1909 . . .	11,294,227	109,291	119	10·53	1·08
1910 . . .	11,387,716	105,285	160	14·05	1·52

Table No. 6.

Statement showing the output of coal, the number of persons employed and the number of tons of coal raised per person employed in and about the coal mines of the principal coal-producing countries of the world.

Year.	Country.	Tons of coal raised.	Persons employed.	Tons raised per person employed.
1909	United Kingdom . . .	263,774,312	997,708	264
1908	United States . . .	369,158,773	690,438	534
„	Germany	195,307,776	667,420	292
„	Austria	44,757,835	131,821	339
„	France	33,283,207	194,980	170
„	Belgium	21,371,726	145,277	147
„	Nova Scotia	6,299,282	12,933	487
„	British Columbia . . .	2,109,387	6,073	347
„	Australia	10,193,135	20,225	503
„	Natal	1,669,774	8,962	186
„	Transvaal	2,689,904	7,825	343
„	Japan	13,447,567	126,999	105
„	New Zealand	1,860,975	3,894	477
1907	Russia	23,587,610	164,819	143
	Totals and average .	989,511,263	3,179,374	311
1910	**British India . . .**	**11,387,716**	**105,285**	**108**

APPENDIX II.

ACCIDENTS IN MINES.

Table No. 1.

List of Fatal Accidents in mines regulated by the Indian Mines Act, 1901, during the year 1910.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			EXPLOSIONS OF FIRE-DAMP—(*27 deaths*).			
1	7th February, 10 P.M.	Dishargarh Mine, Dishargarh P. O.	Equitable Coal Co., Ld.	Lilu Roy, (*m.*), 32, Bidesi Roy, (*m.*), 36, Aklu Roy, (*m.*), 36, Kodu Roy, (*m.*), 32, Balchand Roy, (*m.*), 48, Keharia Chamar, (*m.*), 40, Talebor Kumar, (*m.*), 32, Churu Naia, (*m.*), 28, Rewa Turi, (*m.*), 38, Nathu Roy, (*m.*), 36, *Coal-cutters.* Sambhu Bauri, (*m.*), 18, *Pump khalassi.*	Coal . .	While ten men were working with safety lamps in the Hatnol seam which was connected with the Sanctoria seam by an inclined drift, and while one man was passing with an open light in the Sanctoria seam near the drift an explosion occurred. The ten men in the Hatnol seam were apparently killed outright and the man in the Sanctoria seam died about twelve hours afterwards. *See Report, page 5.* Inspection and inquiry made.
2	29th June, 9-45 A.M.	Saltore Mine, Dishargarh P. O.	Saltore Coal Co., Ld.	Ramdhari Singh, (*m.*), 33, *Head fitter.*	Coal . .	Deceased and others were working at a pump within 20 feet of the shaft bottom and were using open acetylene lamps. An ignition of fire-damp took place and they were all more or less severely burnt. Ramdhari died six hours later. *See Report, page 8.* Inspection and inquiry made.
3	27th July, 11-15 A.M.	Muslia Mine, Asansol P. O.	Ghusik and Muslia Collieries, Ld.	Babu Lal Dome, (*m.*), 42, *Bucket-man.*	Coal . .	Deceased and others were working at the shaft top and one of them struck a match in the open end of an air pipe which was about to be connected with a fan. Fire-damp was ignited and they were severely burnt. Babu Lal died on the following day. The ignition was followed by a sharp explosion which wrecked the head-gear and surface machinery. *See Report, page 8.* Inspection and inquiry made.
4	26th November, 3-30 P.M.	Namdang Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	R. W. Sergeant, (*m.*), 32, *Asst. Foreman.* Mungru Teli, (*m.*), 29, Bokru Gore, (*m.*), 37, *Sirdars.* Ram Kumar, (*m.*), 25, *Basket-filler.* Lachman Kurmi, (*m.*), 28, *Opening man.* Godadhor Gore, (*m.*), 21, *Basket-filler.* Khudia, (*m.*), 19, *Brick mistry.* Sriram Kahar, (*m.*), 29, *Basket-filler.*	Coal . .	Four explosions occurred during the day from fire in the old workings. At the second five persons and at the fourth nine persons received injuries causing death, while at each of these two explosions four persons were seriously injured. *See Report, page 9.* Inspection and inquiry made.

				Hiralal Lohar, (*m.*), 28, *Plate layer.* Mahadeo Kole, (*m.*), 28, *Opening man.* Sankor Keot, (*m.*), 31, *Timber man.* Lalarock Kurmi, (*m.*), 19, *Basket-filler.* Dhoneswar Gore, (*m.*), 28, *Plate layer.* Choiton Koiborto, (*m.*), 26, *Basket-filler.*	

FALLS OF ROOF AND SIDES—(*84 deaths*).

(*a*) Falls of roof—(*52 deaths*).

5	3rd January, 2 A.M.	Hatgarooie Mine, Sitarampur P. O.	Lutchipur Coal Co., Ld.	Bhaglu Kole, (*m.*), 14, *Coal-carrier.*	Coal	Deceased was lying asleep on a sleeper when a pane of roof 15′ × 8′ × 4″ thick fell upon him, injuring him internally, from the effects of which he died eight hours later. Inspection and inquiry made.
6	6th January, 3 A.M.	Baraboni Mine, Asansol P. O.	Baraboni Coal Concern, Ld.	Ram Majhi, (*m.*), 46, *Sirdar.*	Coal	Deceased was robbing coal from the roof of a gallery when a fall of coal and roof stone came away and killed him. He was not a miner and should neither have been getting coal nor been in the mine at this time. Eight months before he was severely injured whilst robbing coal in a similar manner. Inspection and inquiry made.
7	7th January, 1-30 P.M.	Laikdih Mine, Barakar P. O.	Bengal Coal Co., Ld.	Sosti Bauri, (*m.*), 27, *Miner.*	Coal	Deceased entered the mine when he knew the superior officials would be absent and deliberately went alone into a fenced gallery to cut coal. Some roof coal fell upon him while he was at work and injured him so severely that he died two days later. Inspection and inquiry made.
8	2nd February, 11-30 P.M.	Budruchak Mine, Sijua P. O.	Budruchak Coal Mining Co., Ld.	Bhican Koiri, (*m.*), 36, *Miner.*	Coal	Deceased was enlarging a gallery and released some roof stone 7′ 3″ × 6′ 6″ × 6″, which fell on him and killed him outright. *See Report, page 11.* Inspection and inquiry made.
9	3rd February, 11-30 A.M.	South Kustore Mine, Kusunda P. O.	Raniganj Coal Association, Ld.	Gambhiri Shaw Dhobi, (*m.*), 23, *Miner.*	Coal	Deceased was cutting side to enlarge a dip gallery which had been driven narrow, when a piece of roof 24′ long by 5′ 6″ to 0″ wide by 2′ thick fell from between two slips and killed him on the spot. Inspection and inquiry made.
10	5th February, 12 Noon.	Gopalichak Mine, Jharia P. O.	Gopalichak Coal Co., Ld.	Lillu Meah, (*m.*), 35, *Miner.*	Coal	Deceased was cutting coal at a pillar when two tons of coal suddenly fell, killing him instantaneously. *See Report, page 12.* Inspection and inquiry made.
11	18th February, 4-50 A.M.	Tikak Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Bhagirathi Tanti, (*m.*), 29, *Basket-filler.*	Coal	Deceased was lifting a full basket when some top coal and roof dislodged to the right. The man being engaged with the basket could not get clear in time and the fall struck him with full force. He died soon after reaching the hospital. Inquiry made.
12	20th February, 2 P.M.	Chanch Mine, Barakar P. O.	Bengal Coal Co., Ld.	Jainti Bauri, (*m.*), 23, *Miner.*	Coal	While the sirdar was on the surface deceased went with two women through a fence into a disused gallery to rob a pillar. He had cut only three baskets full of coal when a portion of the roof measuring 32′ long × 16′ wide fell and crushed him to death, seriously injuring one of the women. Inspection and inquiry made.
13	25th February, 4 A.M.	Tirap Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Budhu Goal, (*m.*), 29, *Coal-cutter.*	Coal	Two men were cutting a road to commence a new coal opening when a piece of coal weighing about 2 maunds came away from a soft parting at a height of 8′ and fell on deceased. He died on the 13th March after amputation of the leg. Inquiry made.
14	25th February, 11 A.M.	Namdang Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Gulgharie Kole, (*m.*), 27, *Opening man.*	Coal	Two cwts. of coal fell off a slip, rolling on to deceased. He died before being got out of the mine. He had been warned by another miner that the place sounded hollow. Inquiry made.

Fatal Accidents, 1910—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*contd.*			
			(*a*) Falls of roof—*contd.*			
15	9th March, 12 Noon.	Namdang Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Keshu Garait, (*m.*), 22 *Basket-filler.*	Coal . .	Deceased was clearing down some loose coal near the bolt hole, when a small piece of coal, weighing about 7 lbs., fell from the roof from a height of 14 feet. He died on the 4th April from spinal fracture. Inquiry made.
16	10th March, 10-30 A.M.	Bulliari Mine, Kusunda P. O.	East Indian Coal Co., Ld.	Gobind, (*m.*), 30, *Miner.*	Coal . .	While taking down roof coal a portion of jhama roof fell from a pothole and injured deceased so severely that he died the same day. Inspection and inquiry made.
17	10th March, 12-30 A.M.	Kendwadih Mine, Kusunda P. O.	East Indian Coal Co., Ld.	Jitu Turi, (*m.*), 35, Jiblal Turi, (*m.*), 30, *Miners.* Bidki Turin, (*f.*), 22, Patrika Turin, (*f.*), 25, *Carriers.*	Coal . .	Deceased were illegally getting off side from a pillar when an area of roof coal 30′ to 15′ by 26′ by 2′ 6″ thick fell suddenly from slips and killed them. *See Report, page 12.* Inspection and inquiry made.
18	23rd March, 10-20 A.M.	Nandi Mine, Nandi P. O.	Adjai Coal Co., Ld. .	Suku Kurmi, (*m.*), 40, *Coal-cutter.*	Coal . .	Deceased and another were engaged in getting roof coal in an old gallery and had fired a shot. While drilling a hole for a second shot about five tons of coal and stone fell from a height of 13 feet. Suku was killed on the spot and the other slightly injured. Inspection and inquiry made.
19	7th April, 3 P.M.	West Ledo Valley Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Charam Ghatwal, (*m.*), 27, *Basket-filler.*	Coal . .	Deceased was filling a basket when a piece of coal, weighing about 6 cwts., fell from a height of 9 feet. It came from a slip at the side of an opening measuring 6 yards by 5 yards. He died in five minutes. Inquiry made.
20	11th April, 11-45 P.M.	Aldih Mine, Sitarampur P. O.	Aldih Coal Co., Ld. .	Sibhu Bauri, (*m.*), 40, *Miner.*	Coal . .	After being turned out once by the sirdar deceased again went over a fence into a dangerous gallery and was engaged in cutting roof coal when a heavy piece of it fell upon his leg and broke it. He died from the effects three days later. Inspection and inquiry made.
21	15th April, 10 A.M.	Alkusa Mine, Kusunda P. O.	Raniganj Coal Association, Ld.	Nanku Meah, (*m.*), 35, *Coal-cutter.*	Coal . .	The manager had just given orders to have a dangerous piece of overhanging coal at a pillar removed, and when he was standing 8 feet away talking to the sirdars, deceased came up from his working place, presumably to speak to them, and as he passed under this piece, coal 13′ × 4′ × 1′ 6″ fell from a height of 6′ 6″ killing him instantaneously. *See Report, page 12.* Inspection and inquiry made.
22	29th April, 8-30 A.M.	Salanpur Mine, Sitarampur P. O.	Borrea Coal Co., Ld. .	Chamea Passin, (*f.*), 38, *Coal-carrier.*	Coal . .	A piece of roof within a fence was found by the deputy overman to be unsafe. Deceased and several others were standing on the other side of the fence and were warned not to pass it. Immediately the official turned his back deceased passed the fence to pick up her basket when the roof fell and knocked her down. She died from the effects of the injuries at 9 o'clock the next morning. Inspection and inquiry made.

23	9th May, 3 P.M.	Sudih Mine, Sitarampur P. O.	Baraboni Coal Concern, Ld.	Falar Majhi, (*m.*), 40, *Miner.*	Coal . .	Instead of working at the coal face, deceased was cutting floor coal beyond a fence when a portion of the roof fell from between two slips and killed him. Inspection and inquiry made.
24	13th May, 3-30 P.M.	Burhia Mine, Kodarma P. O.	T. H. Wards and Har Nath Singh.	Genda Gope, (*m.*), 14, *Miner.*	Mica . .	Deceased was working with several others in a small open mica mine, clearing away debris to prepare for re-starting the mine when a tree 32′ 6″ high growing on the edge of the excavation, was blown over in a gale of wind causing a large mass of loose quartz to fall into the mine and bury him. His death was caused by suffocation. Inspection and inquiry made.
25	18th May, 11 A.M.	Charanpur Mine, Charanpur P. O.	Apcar & Co. . .	Sookee Kora, (*f.*), 17, *Coal-carrier.*	Coal . .	Deceased was filling a basket with coal in a gallery beneath roof coal which was being taken down. About a ton of coal fell on her, killing her on the spot. *See Report, page 12.* Inspection and inquiry made.
26	2nd July, 6 A.M.	Dandot Mine, Dandot P. O.	North Western Railway ".	Sahib Dad, (*m.*), 30, *Miner.*	Coal . .	A stone fell from the roof on to him and caused a fracture of the spine about its middle. He died on the 25th September through the injuries received.
27	28th July, 1 A.M.	Nadir Khan Mine, Khost Colliery, Khost P. O.	North Western Railway .	Dostai, (*m.*), 28, *Miner.*	Coal . .	Deceased was lying full length on his back waiting for a bar to be set in his working face when a piece of shale roof, weighing about 30 lbs., fell from between two bars upon his stomach and injured-him so severely that he died within five minutes. The place was well timbered. Inspection and inquiry made.
28	9th August, 3-30 P.M.	Ledo Valley, New East Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Akloo, (*m.*), 30, *Basket-filler.*	Coal . .	Deceased was filling a basket when a small piece of coal rolled over from a height of 5 feet, knocking him down. As a sirdar was helping him up, another piece came and fell on his head. Total weight of fall was 5 cwts. He was killed on the spot. Inquiry made.
29	25th September, 1-30 P.M.	Dishargarh Mine, Dishargarh P. O.	Equitable Coal Co., Ld. .	Mohini Baurini, (*f.*), 16, *Carrier.*	Coal . .	Whilst a gang of six men and six women were clearing stone at a fall of roof, about half a ton of stone fell from the cavity left by the original fall. Mohini was killed; Luka Bauri and the European assistant in charge were severely injured. Two others were slightly hurt. Inspection and inquiry made.
30	1st October, 3-30 P.M.	Dandot Mine, Dandot P. O.	North Western Railway .	Bhagat Ram, (*m.*), 18, *Miner.*	Coal . .	Deceased was cutting coal at the face when the roof fell in and buried him, killing him instantaneously.
31	2nd October, 2-30 P.M.	Nodiha Mine, Dishargarh P. O.	Nodiha Coal Co., Ld. .	Chepia Manjhin, (*f.*), 15, *Loading woman.*	Coal . .	Deceased was about to lift a basket full of coal when a piece of roof coal, 2′ 6″ × 2′ 3″ × 1′ 3″ upon which her father had been working a few moments before, fell and broke her leg. She died from the effects of the injury ten days later. Inspection and inquiry made.
32	8th October, 3 P.M.	Alkusa Mine, Kusunda P. O.	Raniganj Coal Association, Ld.	Niru Barwi, (*m.*), 35, *Propping mistry.*	Coal . .	Deceased was assisting in the withdrawal of timber from an area from which the coal had been extracted, and in attempting to recover a wedge from beneath roof from which the timber supports had been taken out, he was caught by a fall of roof coal, which was 3′ thick and fell over an area 6′ square, and was killed on the spot. Inspection and inquiry made.
33	15th October, 7-15 P.M.	Sitalpur Mine, Dishargarh P. O.	Bengal Coal Co., Ld. .	Bachu Lodh, (*m.*), 25, Debi Gararia, (*m.*), 30, Mathu Passi, (*m.*), 30, Sukhi Passi, (*m.*), 28, Ramdin Passi, (*m.*), 27, Kabardar Passi, (*m.*), 23, Nani Passi, (*m.*), 32, Dooli Passi, (*m.*), 28, Nathu Passi, (*m.*), 35, Mahabir Ahir, (*m.*), 28, *Miners.* Ramsurah Gope, (*m.*), 23, *Stone-cutter.* Kohil Singh, (*m.*), 25, *Sirdar.*	Coal . .	A pillar had been goafed and the timber had been withdrawn. In order to secure a little coal that had come down with the goafed roof the manager had the timber reset. While the twelve deceased were picking up this coal the roof collapsed over the timber and completely buried them. *See Report, page 12.* Inspection and inquiry made.

Fatal Accidents, 1910—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*contd.*			
			(*a*) Falls of roof—*concld.*			
34	27th October, 11 P.M.	Aldih Mine, Sitarampur P. O.	Aldih Coal Co., Ld.	Tribhanga Bauri, (*m.*), 25, *Miner.*	Coal	Deceased left his proper working place on the plea of getting a drink of water. About an hour later a heavy fall took place and several miners were directed to the place by his cries. They found him under a piece of coal, measuring 5½′ × 5′ × 2½′ which had fallen from the corner of a pillar. A hammer and wedge were lying by his side. The place was a disused gallery properly fenced. Inspection and inquiry made.
35	17th November, 12-30 P.M.	West Ledo Valley Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Persadie, (*m.*), 30, *Basket-filler.*	Coal	Deceased was walking away dragging his *kodali* when about 6 cwts. of coal fell without warning out of the middle of an opening and caught him. It knocked him on to the *kodali* smashing his thigh. A European assistant inspected the place ten minutes before and all was safe. Deceased died on reaching hospital. Inquiry made.
36	17th November, 3 P.M.	South Gobindpur Mine, Katrasgarh P. O.	South Gobindpur Colliery, Ld.	Saoni Kohlin, (*f.*), 13, *Coal-carrier.*	Coal	Deceased went with her father to rob coal from old workings. Whilst doing so she was struck on the head by a fall of coal and sustained injuries from which she died shortly after. Inspection and inquiry made.
37	30th November, 4 P.M.	Kusumkanali Mine, Barakar P. O.	Royal Bengal Coal Co.	Matu Singh, (*m.*), 25, Rajabali, (*m.*), 27, Jodu Mahato, (*m.*), 30, *Miners.*	Coal	Five persons were cutting floor coal in a gallery when a piece of stone measuring 12′ × 6′ 6″ × 1′ 4″ fell upon them, killing three on the spot and injuring the other two. *See Report, page 14.* Inspection and inquiry made.
38	8th December, 11 P.M.	West Gopalichak Mine, Kusunda P. O.	Gopalichak Coal Co., Ld.	Siram Bauri, (*m.*), 38, *Coal-cutter.*	Coal	Whilst deceased was taking down roof coal a fall came away and struck him. He sustained a fracture of the arm and other injuries from the effects of which he died a few days later. The fall was 5′ × 4′ × 1′ 11″ thick. Inspection and inquiry made.
39	14th December, 2 A.M.	Barkui Mine, Pench Valley P. O.	Pench Valley Coal Co., Ld.	Parbutia Bania, (*f.*), 25, *Coal-carrier.*	Coal	A hewer, who was pillar-cutting, gave the signal to two women that the roof was "working" and deceased in her excited state ran in the direction of the goaf and was just caught by the edge of the fall. She sustained a fracture of the skull.
40	19th December, 12-30 A.M.	Bhagaband Mine, Jharia P. O.	Borrea Coal Co., Ld.	Nuni Muni Ghatwarin, (*f.*), 25, *Coal-carrier.*	Coal	Deceased was struck by the fall of a slab of roof shale measuring 4′ × 7′ 6″ × 3″ thick. Inspection and inquiry made.
			Falls of sides—(*32 deaths*).			
41	16th February, 3 P.M.	Namdang Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Jagatdhari Gond, (*m.*), 26, Khedu Majhi, (*m.*), 29, *Basket-fillers.*	Coal	Three tons of coal fell from a slip on the top side of an opening, killing Jagatdhari Gond on the spot. Khedu Majhi died on the 18th February. Inquiry made.
	4th May, 5 P.M.	Tarajhopa Mine, Kodarma P. O.	Tofani Singh	Gondo Chassier, (*m.*), 40, Jitua, (*m.*), 35, *Mica petty Contractors.*	Mica	Deceased entered a discontinued mine to get mica to sell to the owner of the mine and were buried by a fall of side 15′ high by 12′ wide by 1½′ thick. Inspection and inquiry made.

43	23rd May, 1-30 P.M.	Chowrasi Mine, Dishargarh P. O.	Equitable Coal Co., Ld.	Bhagbol Majhi, (*m.*), 30, *Coal-cutter.*	Coal . .	Deceased went through a fence and whilst robbing a pillar was killed by a fall of about three tons of coal from the side. Inspection and inquiry made.
44	31st May, 6 A.M.	Chinchuria Mine Asansol P. O.	New Beerbhum Coal Co., Ld.	Pio Majhain, (*f.*), 14, *Coal-carrier.*	Coal . .	Deceased was filling a basket with coal at a point where a gallery was being widened when about 10 tons of side coal fell over. She was pinned down and received injuries from which she died about an hour afterwards. *See Report, page 14.* Inspection and inquiry made.
45	6th July, 10 A.M.	Old East Ledo Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Mahadeb, (*m.*), 30, *Opening-man.*	Coal . .	About 20 tons of coal rolled off the side of an opening which was very steep and 21′ by 24′ by 20′ high in size. There were three escape roads and deceased would easily have got clear but unfortunately fell. He was killed on the spot. Inquiry made.
46	7th July, 1-30 A.M.	Bhowra Mine, Jharia P. O.	Eastern Coal Co., Ld. .	Bara Darbari Syne, (*m.*), 40, *Miner.* Chota Darbari Syne, (*m.*), 12, *Coal-carrier.*	Coal . .	In the absence of the official in charge of the mine both deceased started to cut coal in their carrying road, which was 34 feet high. After working for a short time they sat down to smoke when suddenly and without warning a slab of side coal 27′ high by 10′ wide by 1½′ thick on which they had been working fell and buried them. *See Report, page 15.* Inspection and inquiry made.
47	14th July, Midday.	Inurkurti or D Mine, Sydapuram P. O.	A. Subba Naidu . .	Uta Chinna Vadu, (*m.*), 22, Goripati Papadu, (*m.*), 25, *Drilling coolies.*	Mica . .	An overhanging mass of decomposed pegmatite fell on deceased from the side of the quarry. *See Report, page 15.* Inspection and inquiry made.
48	24th July, 4-30 A.M.	Murulidih Mine, Mohoda P. O.	Bengal Coal Co., Ld. .	Dayal Turi, (*m.*), 25, *Miner.*	Coal . .	Deceased was found buried beneath coal that had fallen from the corner of a pillar in some old workings. It is surmised that he entered to get some easy coal as his pick was lying by his side. The fall was 7′ 10″ high by 4½′ wide by 2′ thick. Inspection and inquiry made.
49	20th August, 10 A.M.	Bhalgora Mine, Jharia P. O.	Bhalgora Coal Co., Ld. .	Jagu Bhuia, (*m.*), 50, *Miner.*	Coal . .	Deceased left his working place and commenced to dress back the corner of a pillar with the object of getting some easy coal to complete the loading of his tub. After a few blows from his pick, coal 7′ high by 3′ wide by 1¼′ thick, fell from the corner and broke his thigh. He died from shock 17 hours later. Inspection and inquiry made.
50	1st September, 4 P.M.	Dobari Mine, Jharia P. O.	Dobari Coal Co. . .	Mangru Bhuia, (*m.*), 25, *Miner.* Helib Bhuin, (*f.*), 21, *Coal-carrier.*	Coal . .	A miner and his wife were working in a temporarily disused part of a quarry when portion of the overburden, 18′ long by 4½′ high by 1¼′ thick, consisting of made ground, fell and buried them. Inspection and inquiry made.
51	26th September, 1-30 P.M.	Salanpur Mine, Sitarampur P. O.	Borrea Coal Co., Ld. .	Sona Majhi, (*m.*), 26, *Coal-cutter.*	Coal . .	Deceased went through a fence and was cutting coal from the side of a pillar when about three tons of coal fell on him and killed him on the spot. Inspection and inquiry made.
52	30th September, 2 P.M.	Kankani Mine, Sijua P. O.	Eastern Coal Co., Ld. .	Rudu Meah, (*m.*), 35, *Coal-cutter.*	Coal . .	Deceased was one of three men who were unlawfully cutting floor coal in an old gallery 25 feet high where such work had been stopped a fortnight before owing to danger of a fall. About 20 tons of coal fell on him from the corner of a pillar and he received injuries from which he died the same day. There were no officials in the mine at the time. *See Report, page 15.* Inspection and inquiry made.
53	5th October, 11 A.M.	Sudamdih Mine, Bhujudih P. O.	Sudamdih Coal Co., Ld. .	Budhu Gori, (*m.*), 32, *Coal-cutter.*	Coal . .	Deceased left his working place and began to cut coal from the corner of a pillar when a mass of about two tons of coal fell from the pillar and overwhelmed him. No marks of injury were found, and he is presumed to have died from the effects of suffocation and shock. A girl who was passing at the time was knocked down and severely injured about the head. Inspection and inquiry made.
54	25th October, 5 P.M.	Kurkend Mine, Kusunda P. O.	Central Kurkend Coal Co., Ld.	Luki Turi, (*m.*), 22, *Coal-carrier.*	Coal . .	Deceased was one of a gang of three men who were driving a length of 20 feet of a long continuous face of coal towards a boundary a few feet distant. The officials permitted them to undercut with the result that a mass of coal 18 feet long by 0 to 5 feet wide and 4 feet high, fell away from a smooth joint and killed him on the spot. The weight of the fallen coal was about seven tons. The other two men had just ceased work and gone home. Inspection and inquiry made.

Fatal Accidents, 1910—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*concld.*			
			Falls of sides—*concld.*			
55	6th December, 3-45 P.M.	Shivrajpur Mine, Shivrajpur P. O.	Shivrajpur Syndicate, Ld.	Chinda Raghla, (*m.*), 25, Sewa Narasingh, (*m.*), 23, Babar Namla, (*m.*), 20, Oondhia Joria, (*m.*), 14, Kania Chinda, (*m.*), 8, Roopla Dipla, (*m.*), 10, Rangli Bindle, (*f.*), 18, Hatia Mansingh, (*m.*), 22, Gullia Chimaria, (*m.*), 20, Viria Ramji, (*m.*), 30, Jania Lakada, (*m.*), 40, Jhingli, (*f.*), 20, *Coolies.*	Manganese	While twenty-seven persons were working at the bottom of a quarry a portion of the hanging wall collapsed. Eleven were killed outright and one died an hour later. In this part of the mine the hanging wall is intensely folded. *See Report, page 15.* Inspection and inquiry made.
56	14th December, 1-30 A.M.	Pottery Mine, Raniganj P. O.	Burn & Co., Ld.	Chuni Baurin, (*f.*), 14, *Coal-carrier.*	Coal	Deceased entered a gallery just as a miner was wedging down a piece of coal. Although warned of the danger she failed to stand clear with the result that she sustained a compound fracture of her right leg and arm from the effects of which she died. *See Report, page 17.* Inspection and inquiry made.
			IN SHAFTS—(*20 deaths*).			
			Overwinding—(*2 deaths*).			
57	18th June, 12 Noon.	Raghunathbati, Sitarampur P. O.	Sudihi Coal Co., Ld.	Duli Baurini, (*f.*), 12, Sumi Baurini, (*f.*), 16, *Water-bailers.*	Coal	During the temporary absence of the winding engineman the boiler fireman, without authority, raised from the bottom of the shaft a cage in which were the two deceased. He overwound and, there being no detaching hook, the cage struck the cross beams in the head gear, and the rope broke. The cage fell 305 feet to the bottom and the women were killed on the spot. Inspection and inquiry made.
			Whilst ascending and descending by machinery—(*3 deaths*).			
58	28th January, 10-30 A.M.	Pottery Mine, Raniganj P. O.	Burn & Co., Ld.	Jangli Kori, (*m.*), 40, *Coal-cutter.*	Coal	Deceased was being raised up a shaft 109 feet in depth by a gang of women hauling a rope when he let go the rope and fell to the bottom. He was killed on the spot. Inspection and inquiry made.
59	6th June, 12-30 P.M.	New Damra Mine, Kalipahari P. O.	Phularitand Coal Co., Ld.	Nihal Shah, (*m.*), 25, *Shaft-sinking sirdar.*	Coal	Deceased lighted a round of 5 gun-powder shots at the bottom of the shaft and had been drawn up in the bucket for about 15 feet when one of the shots exploded. He was sitting on the rim of the bucket, and on being struck by flying rock fell to the bottom of the shaft. He was killed on the spot. Inspection and inquiry made.

60	1st October, 1-30 P.M.	Khaira Mine, Kusunda P. O.	East Indian Coal Co., Ld.	Bindu Kole, (*m.*), 25, *Pump-khalassi.*	Coal	Deceased went down in the water bucket to see what depth of water there was in the shaft. A few minutes later he shouted to be drawn up. When the bucket had been raised about 20 feet the hook-man noticed the rope oscillating and shouted to the engineman, who stopped the engine. After waiting for some little time the bucket was slowly drawn to the surface. Bindu was found lying at the bottom of the bucket, having sustained injuries from which he died shortly after. The bucket probably collided with some girders in the shaft. Inspection and inquiry made.
			Falling into the shaft from the surface—(*2 deaths*).			
61	6th February, 6-45 P.M.	Bejdih Mine, Sitarampur P. O.	Equitable Coal Co., Ld.	Kedar Bauri, (*m.*), 30, *Banksman.*	Coal	While carrying coal to mend the pit bank fire deceased caught his foot against a beam and stumbled forward into an unfenced sinking shaft 358 feet deep. His body was found in the sump. *See Report, page 17.* Inspection and inquiry made.
62	14th September, 4-30 P.M.	Gopalichak Mine, Jharia P. O.	Gopalichak Coal Co., Ld.	Ananta Burhi, (*m.*), 35, *Fitter.*	Coal	Whilst lowering a small Tangye pump the coolies let go the handles. Deceased made a grab at the rope which was attached to the pump for steadying it and was dragged down the shaft.
			Falling from part of the way down—(*7 deaths*).			
63	21st January, 3 P.M.	Bhutgoria Mine, Jharia P. O.	Aldih Coal Co., Ld.	Sukia Gorain, (*f.*), 26, Neria Goalin, (*f.*), 36, Uday Mahato, (*m.*), 55. *Bailing coolies.*	Coal	While two men and four women were being lowered the cage was stopped as a tub had got into the sump. The three deceased took off the safety chain and walked out, thinking the cage had reached the pit bottom and fell down 81 feet. Neria and Uday died almost immediately and Sukia about a quarter of an hour later. Inspection and inquiry made.
64	29th August, 8-30 P.M.	North Anantapur Mine, Morriston P. O.	North Anantapur Gold Mines, Ld.	Balapolunir Rodrigadu, (*m.*), 30, *Stuff-coolie.*	Gold	Deceased was climbing up a shaft on a ladder and fell when 17 feet from the bottom. Inquiry made.
65	4th October, 10-30 A.M.	Taroktan Mine, Mogok P. O.	Burma Ruby Mines, Ld.	Moung San Win, (*m.*), 18, *Coolie.*	Rubies	Deceased was guiding a rope which was raising a pipe from a disused pump at the bottom of a shaft. The pipe caught the plank on which he was standing and shook him off. He failed to maintain his hold on the rope and fell down the shaft about 40 feet, dislocating his neck.
66	8th October, 8-30 P.M.	Sibpur Mine, Charanpur P. O.	Katras Jharia Coal Co., Ld.	Meighu Kole, (*m.*), 25, *Miner.*	Coal	While descending a shaft 242 feet deep deceased fell out of the cage. It is surmised that the pick upon which he was leaning slipped and that he lost his balance. *See Report, page 17.* Inspection and inquiry made.
67	27th November, 4-30 P.M.	Borrea Mine, Sitarampur P. O.	New Beerbhum Coal Co., Ld.	Icha Muchi, (*m.*), 35, *Pump-khalassi.*	Coal	The edge of an ascending hoppit caught a suspended platform upon which deceased was repairing a pump in a sinking shaft and made it turn turtle, both he and the pump being precipitated into the sump 15 feet below. Although there was plenty of room in the shaft a clearance of 18″ only had been allowed between the hoppit and the platform. Inspection and inquiry made.
			Things falling from the surface—(*3 deaths*).			
68	17th June, 10-30 A.M.	Serampur Mine, Giridih P. O.	East Indian Railway Co.	Gondo Turi, (*m.*), 30, *Onsetter.*	Coal	A piece of coal became dislodged from a tub that was being withdrawn from a cage and, falling down the shaft, struck the deceased on the head causing fracture of the skull. *See Report, page 18.* Inspection and inquiry made.
69	23rd September, 5-30 P.M.	Bhulanbarari Mine, Jharia P. O.	Bhulanbarari Coal Co., Ld.	Uchitlaldeo, (*m.*), 20, *Bellman.*	Coal	A line mistry had come up the shaft in a cage and on his reaching the surface a crowbar slipped out of his hand and fell down the shaft killing the onsetter at the shaft bottom.
70	28th October, 1 A.M.	Borrea Mine, Sitarampur P. O.	New Beerbhum Coal Co., Ld.	Gurra Majhi, (*m.*), 32, *Miner.*	Coal	A piece of coal became dislodged from a loaded tub, owing to the cage settling on the keps at the surface with a bump, and fell down the shaft, striking deceased on the head just as, contrary to orders, he was crossing over the sump boards at the shaft bottom. There was a space of 8″ between the end of the cage and the edge of the pit bank. A sirdar was present at the shaft bottom. *See Report, page 18.* Inspection and inquiry made.

Fatal Accidents, 1910—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			IN SHAFTS—*contd.*			
			Things falling from part of the way down—(*2 deaths*).			
71	28th February, 7-30 P.M.	Lutchipur Mine, Sitarampur P. O.	Lutchipur Coal Co., Ld.	Jatu Majhi, (*m.*), 22, *Miner.* Chuna Majhi, (*m.*), 30, *Onsetter.*	Coal . .	The authorized onsetter with a miner was descending to resume charge of the shaft bottom when a loaded tub fell from the ascending cage, a distance of 325 feet, upon the descending cage and killed the occupants outright. The tub had been put on the cage by a miner who failed to drop the snek-bar. Inspection and inquiry made.
			Miscellaneous—(*1 death*).			
72	25th March, 11-30 P.M.	Sodepur Mine, Sitarampur P. O.	Bengal Coal Co., Ld. .	Nirmal Meah, (*m.*), 18, *Onsetter.*	Coal . .	Deceased stepped upon the sump boards to pick up a lump of coal when a loaded cage, which had just been raised from the bottom of the shaft, was lowered again, crushing him to death. Inspection and inquiry made.
			BY EXPLOSIVES—(*8 deaths*).			
73	11th February, 8 A.M.	Benahir Mine, Jharia P. O.	Standard Coal Co., Ld. .	Fagu Manjhi, (*m.*), 35, Porbut Manjhi, (*m.*), 28, Naika Manjhi, (*m.*), 30, *Coal cutters.* Sambhu Manjhi, (*m*), 8.	Coal . .	The men were making country powder into cartridges in their house round a fire, when, probably from a spark, the powder exploded, injuring the three deceased so that they all died, Porbut on the 13th, Sambhu on the 15th and Fagu on the 19th February. *See Report, page 18.* Inspection and inquiry made.
74	24th February, 4 P.M.	Sendra Mine, Bansjora P. O.	Sendra Coal Co., Ld. .	Haril Singh, (*m.*), 26, *Sinker.*	Coal . .	Six shots had been put off at 10 A.M. Only five were heard to go off, but the sirdar concluded that two had gone off together. As four sinkers including deceased, were removing the debris at 4 P.M., a cartridge lying in it exploded, injuring him so severely that he died the following evening. Inspection and inquiry made.
75	20th July, 3 P.M.	Balaghat Mine, Kampti P. O.	Central Provinces Prospecting Syndicate, Ld.	Chidi Mahadeo, (*m.*), 28, *Ore-worker.*	Manganese .	Deceased was drilling in an old hole which had been exploded three days before. The hole was not a missfire. An explosion occurred causing a fracture of his left hand. Blood poisoning supervened and he died a few days later. Inspection and inquiry made.
76	15th September, 7 A.M.	Balaghat Mine, Kampti P. O.	Central Provinces Prospecting Syndicate, Ld.	Lutaru, (*m.*), 20, *Coolie.*	Manganese .	While deceased and others were loading a trolley blasting became necessary. They took shelter under a straw hut. When the shot was fired a stone weighing 3½ seers was hurled through the air for 348 feet. It fell through the eve of the hut on to his head, fracturing it. Inspection and inquiry made.
77	25th November 4-30 P.M.	Shivrajpur Mine, Shivrajpur P. O.	Shivrajpur Syndicate, Ld.	Chago Judha, (*m.*), 45, *Coolie.*	Manganese .	Contrary to orders deceased took shelter during blasting operations in a cutting lying at right angles to the blast and was struck by a piece of rock which cannoned off the opposite wall. His left arm and four ribs were broken from the effects of which he died the next morning.
			IRRUPTIONS OF WATER OR FALLING INTO WATER—(*6 deaths*).			
78	26th October, 9 A.M.	Murulidih Mine, Mohuda P. O.	Bengal Coal Co., Ld. .	Punit Dhobi, (*m.*), 30, Gura Mahato Gowala, (*m.*), 30, Bhiku Meah, (*m.*), 20,	Coal . .	They were drowned by an inrush of water consequent on the holing of a working gallery into an accumulation of water in galleries to the rise. *See Report, page 18.* Inspection and inquiry made.

				Ali Meah, (*m.*), 18, Jaun Meah, (*m.*), 22, Chatur Meah, (*m.*), 18, *Main gallery drivers.*		
			HAULAGE—(*16 deaths*).			
79	20th January, 11-30 A.M.	Nodiha Mine, Dishargarh P. O.	Nodiha Coal Co., Ld.	Rabi Baurini, (*f.*), 45, *Bailing kamin.*	Coal	While seven loaded tubs were being raised up the brow of an incline the link of a coupling chain opened at a defective weld and five of the tubs ran back, breaking the back-stay and striking the deceased who was standing at the end of a landing. She was killed instantly. *See Report, page 19.* Inspection and inquiry made.
80	21st January, 11 A.M.	Kusunda Mine, Kusunda P. O.	Kusunda and Nayadi Collieries, Ld.	Gandhya, (*f.*), 35, *Coal-carrier.*	Coal	The hookman had either omitted to couple the three front tubs of a set of six empty tubs to the back three, or had coupled them improperly, and when he pushed the set over the brow, the three tubs ran wild, injuring two women, including deceased, who were in the incline waiting for their tubs. She died sixteen days later. *See Report, page 19.* Inspection and inquiry made.
81	29th January, 10 A.M.	Baraboni Mine, Asansol P. O.	Bilbera Coal Co., Ld.	Golapi Baurini, (*f.*), 40, *Coal-carrier.*	Coal	After the signal to draw away the set had been given deceased attempted to cross the line between the first and second tubs of the set. She was knocked down and received injuries from which she died a week later. *See Report, page 20.* Inspection and inquiry made.
82	4th February, 4-15 P.M.	Bhulanbarari Mine, Jharia P. O.	Bhulanbarari Coal Co., Ld.	Nimchand Kahal, (*m.*), 24 *Line-coolie.*	Coal	Two empty tubs were being lowered from an incline into a level. As they went over the points, the lower tub became detached from the upper tub and ran violently into the level, injuring deceased. He died that night. Inspection and inquiry made.
83	17th March, 8 P.M.	Ganzlatan Mine, Katrasgarh P. O.	New Manbhum Coal Co., Ld.	Talu Bhori, (*m.*), 45, *Trolleyman.*	Coal	As seven empty tubs were being lowered down an incline dipping 1 in 3, the hook attaching the tubs to the rope broke and the tubs ran wild, passing over deceased, who died from his injuries two hours later. Inspection and inquiry made.
84	19th April, 3 P.M.	Sitalpur Mine, Dishargarh P. O.	Bengal Coal Co., Ld.	Parag Passi, (*m.*), 30, *Miner.*	Coal	Four empty tubs became detached from a set and ran wild down a haulage plane. They collided with two old tubs lying at the end of a landing behind which two miners, including deceased, on being warned of their danger, had taken refuge. Both men were seriously injured and deceased succumbed immediately on reaching the surface. Inspection and inquiry made.
85	17th May, 9-30 A.M.	Kila Ali Khan Mine, Khost Colliery, Khost P. O.	North Western Railway	Hosain, (*m.*), 27, *Outaller.*	Coal	Rather than wait for the riding tub, which was standing 180 feet below, to take him up to the surface, deceased preferred to climb the somewhat perilous ascent to the surface up a grade of 50°. Shortly afterwards he was picked up at the bottom of the drift suffering from concussion of the brain from the effects of which he died ten hours later. It is surmised that he lost his foothold. Inspection and inquiry made.
86	25th June, 12 Noon.	Sanctoria Mine, Dishargarh P. O.	Bengal Coal Co., Ld.	Moula Bux, (*m.*), 38, *Fitter's coolie.*	Coal	Owing to a storm deceased, without a light, took refuge in an incline. He was knocked over and killed by a tub which ran wild down the incline, having been blown over the brow by the storm. *See Report, page 20.* Inspection and inquiry made.
87	3rd July, 6-15 A.M.	Burra Dhemo Mine, Sitarampur P. O.	Burra Dhemo Coal Co., Ld.	Sohaji Baurini, (*f.*), 45, *Trammer.*	Coal	She was crushed by a tub which ran away owing to its not being properly spragged. Inspection and inquiry made.
88	7th July, 6 P.M.	Babisole Mine, Baktanagar P. O.	Bilbera Coal Co., Ld.	Baneshwar Bauri, (*m.*), 45, *Trammer.*	Coal	Owing to the breaking of a sprag a loaded tub ran wild down a grade of 1 in 20. Deceased was crushed between this tub and another tub which he was pushing at the time. He sustained internal injuries and died about an hour afterwards. Inspection and inquiry made.

Fatal Accidents, 1910—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			HAULAGE—*concld.*			
89	16th July, 9 A.M.	Jinagora Mine, Jharia P. O.	East Barari Coal Co.	Manju Rajwarin, (*f.*), 41, *Coal-carrier.*	Coal	As a set of five empty tubs was being lowered, the ropes became detached and the tubs ran wild. Deceased and her husband had reached the end of the first landing to get one of the tubs as soon as they arrived. They were warned by the hookman that the tubs had broken loose, but before they could escape the tubs smashed into them, pinning the woman against the corner of a pillar and breaking the man's leg. Inspection and inquiry made.
90	25th August, 7-30 A.M.	Gopalichak Mine, Jharia P. O.	Gopalichak Coal Co., Ld.	Abdul Meah, (*m.*), 30, *Pump-khalassi.*	Coal	Deceased was riding between the tubs contrary to orders when the haulage rope broke. The drag acted and threw the tubs off the rails. On jumping off he got caught between the side and one of the tubs.
91	29th September, 7 A.M.	Tikak Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Milap, (*m.*), 37, Gunjra, (*f.*), 26, *Tub-pushers.*	Coal	Deceased were riding on the ninth tub of a workman's train of 25 tubs. The tub they were in was derailed and knocked out two settings. This caused a fall of coal from the roof which fell on them. They were killed on the spot. Inquiry made.
92	29th September, 4 P.M.	Barkui Mine, Pench Valley P. O.	Pench Valley Coal Co., Ld.	Ajudia Prosad, (*m.*), 22, *Miner.*	Coal	Deceased was standing at the bottom of an incline when a tub which had run wild from the surface struck him and killed him.
93	30th September, 2 A.M.	Sitalpur Mine, Dishargarh P. O.	Bengal Coal Co., Ld.	Bhuji Baurini, (*f.*), 17 *Rail kamin.*	Coal	Owing to the slipping of a haulage clip two tubs ran wild down a grade on an endless rope haulage plane. By some means deceased got in front of the tubs and was killed. Inspection and inquiry made.
			BY UNDERGROUND MACHINERY—(*1 death.*)			
94	13th July, 1-30 P.M.	Chowrasi Mine, Dishargarh P. O.	Equitable Coal Co., Ld.	Nitai Bauri, (*m.*), 20, *Pump attendant.*	Coal	Deceased was in charge of an electrically driven three-throw pump, and, whilst leaning over to screw down a lubricator, his clothing got caught by a stud on a countershaft. He was carried round the shaft, sustaining injuries from which he died a few hours later. Inspection and inquiry made.
			SUNDRIES UNDERGROUND—(*8 deaths*).			
95	18th January, 2-30 P.M.	Mayo Mine, Khewra P. O.	Government of India	Nek Bibi, (*f.*), 65, *Carrier.*	Salt	Deceased fell, whilst carrying marl weighing 41 seers, and received injuries which proved fatal. What exactly occurred is not known as she was dead when found.
96	11th February, 8 A.M.	Khost Mine, Khost P. O.	North Western Railway	Naku, (*m.*), 28, *Miner.*	Coal	Deceased was climbing a stenton rising at an angle of 57° by the aid of a rope attached to a winch roll fitted with a pawl and ratchet. Just as he was about to land at the level above, the pawl became disengaged, the rope paid out and he fell to the bottom of the stenton 100 feet below. He sustained an injury to the brain from the effects of which he died a fortnight later. Inspection and inquiry made.
97	31st March, 1 P.M.	Khost Mine, Khost P. O.	North Western Railway	Musafir, (*m.*), 26, *Miner.*	Coal	As deceased was trying to remove an obstruction in a coal shoot placed at an angle of 53° in a low stenton, one of the sections buckled and nipped his leg against the roof causing fracture above and below the knee. It took three hours' work to effect his release. He died from collapse early the next morning. Inspection and inquiry made.

98	14th April, 2 P.M.	Charanpur Mine, Charanpur P. O.	Apcar & Co.	Parson Lodh, (*m.*), 24, *Miner.*	Coal	While cutting roof coal from a stool deceased lost his foothold and fell a distance of 9 feet. He managed to walk home, but succumbed shortly afterwards to compression of the brain. Inspection and inquiry made.
99	24th June, 2 P.M.	Jamadoba Mine, Jharia P. O.	Indian Collieries Syndicate, Ld.	Bir Singh Kahar, (*m.*), 25, *Tindal sirdar.*	Coal	While in the act of unloading a pump from two trollies by means of a lever, using a sleeper as a fulcrum, the latter turned over and allowed the pump to fall heavily half on the trollies and half on a cog placed to receive it with the result that it canted over and struck deceased a terrific blow on the chest. Death was practically instantaneous. Inspection and inquiry made.
100	3rd July, 3 A.M.	Upper Ledo Mine, Margherita P. O.	Assam Railways and Trading Co., Ld.	Muriah Gore, (*m.*), 30, *Coolie.*	Coal	Deceased was cleaning out a water course by the side of a tram line and slipped in the way of a full tub which was being pushed out. He was crushed between the tub and the side. Inquiry made.
101	23rd August, 4 A.M.	Dandot Mine, Dandot P. O.	North Western Railway	Futteh Mahomed, (*m.*), 15, *Coolie.*	Coal	A jamb slipped out from a tub which was on a slope and the tub ran over the boy's leg, fracturing it. He died from its effects on the 25th August.
102	31st December, 5 P.M.	Shampur Mine, Nirshachati P. O.	Shampur Coal Company, Ld.	Somenia Bauri, (*f.*), 32, *Loading coolie.*	Coal	Deceased was attempting to cross a level tram line underground when she was knocked down by an approaching tub which was being pushed by two men. She sustained severe flesh wounds on her right leg and died a month later. Inspection and inquiry made.
			ABOVE GROUND.			
			By Surface Machinery—(*1 death*).			
103	21st November, 2 A.M.	North Anantapur Mine, Morriston P. O.	North Anantapur Gold Mines, Ld.	Madhowan Nair, (*m.*), 18, *Mill-oiler.*	Gold	Deceased went to oil some machinery with a blanket round him. The blanket evidently was caught by the clutch of a belt wheel and he was drawn in and crushed. When found he was dead. Inspection and inquiry made.
			On surface railways and tramways belonging to the Mine—(*8 deaths*).			
104	5th January, 3-30 P.M.	Madhubpur Mine, Baktanagar P. O.	Imperial Coal Co., Ld.	Govinda Chandra Mittra, (*m.*), 37, *Gomasta.*	Coal	Deceased was riding on the foot-plate of a colliery locomotive when it derailed and overturned. He was pinned beneath it and sustained injuries which resulted in death within a few hours. Inspection and inquiry made.
105	21st January, 1 P.M.	Satpukuria Mine, Asansol P. O.	Satpukuria and Asansol Collieries, Ld.	Umed Akuria, (*m.*), 30, *Locomotive fireman.*	Coal	Deceased was riding on the front of a colliery locomotive when it derailed and overturned. His foot was severely cut and he died a week later from blood poisoning. Inspection and inquiry made.
106	3rd February, 2 P.M.	Satpukuria Mine, Asansol P. O.	Satpukuria and Asansol Collieries, Ld.	Kalpo Ankuria, (*m.*), 32, *Locomotive fireman.*	Coal	Whilst a colliery locomotive was running reversed deceased was shovelling coal into the fire box, when he slipped and fell through the guard rail on to the line. He was caught by the cow-catcher and killed on the spot. Inspection and inquiry made.
107	12th March, 9-30 A.M.	Chasnalla Mine, Bhujudih P. O.	Lodna Colliery Co., Ld.	Amir Meah, (*m.*), 30, *Haulage engine khalassi.*	Coal	Deceased was illegally riding upon a train of full tubs, drawn by a colliery locomotive, when the tubs, and ultimately the locomotive, became derailed owing to excessive speed. He was caught between the tubs and crushed so severely that he died the following day. Inspection and inquiry made.
108	30th May, 9 A.M.	Kandri Mine, Kampti P. O.	Central Provinces Prospecting Syndicate, Ld.	Panna, (*m.*), 40, *Coolie.*	Manganese	The brakesman lost control of the brake on a self-acting incline owing to its jamming. The upcoming empty wagon was overwound and caught one of the hookers, killing him instantaneously. Inspection and inquiry made.
109	20th June, 10 A.M.	Mansar Mine, Kampti P. O.	Central Provinces Prospecting Syndicate, Ld.	Bari, (*f.*), 35, *Loader.*	Manganese	Deceased was knocked down by a full tub and received severe injuries. Blood poisoning supervened and she died on the 30th June.
110	4th November, 9 A.M.	Angarpatra Mine, Katrasgarh P. O.	Union Coal Co., Ld.	Gaya Kurmi, (*m.*), 28, *Locomotive fireman.* Lazar Ali Meah, (*m.*), 25, *Hookman.*	Coal	During the temporary absence of the driver Gaya Kurmi started a colliery locomotive against orders. After going a short distance down a slight grade the locomotive got out of control and one of the six tubs, which it was pushing, derailed. This led to the derailment of the locomotive and it fell over a small bridge. The injector pipe burst and the two men in the cab were severely scalded. Gaya Kurmi was dead when removed from the cab, but Lazar Ali lived for two days afterwards. Inspection and inquiry made.

Fatal Accidents, 1910—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			ABOVE GROUND—*concld.*			
			Miscellaneous on surface—(*7 deaths*).			
111	3rd January, 4-30 P.M.	Bhuskajuri Mine, Asansol P. O.	Bhuskajuri Coal Co., Ld.	Ragi Turi, (*f.*), 13, *Water-bailer.*	Coal	Deceased went to draw water from a prohibited well and, falling in, was drowned. Inspection and inquiry made.
112	20th January, 10-45 A.M.	Serampur Mine, Giridih P. O.	East Indian Railway Co.	Kripa Dosadh, (*m.*), 30, *Coolie.*	Coal	Some coolies were overturning a heavy and unwieldy casting by means of a long prop when the casting suddenly overbalanced. The prop was jerked out of the hands of the coolies and struck deceased, who was stationed on the other side of the casting, on the head, killing him on the spot. Inspection and inquiry made.
113	26th February, 7 A.M.	Loyabad Mine, Bansjora P. O.	Barakar Coal Co., Ld.	Bugi Tamalli, (*m.*), 28, *Underground roadman.*	Coal	Deceased and two others were removing rollahs, 18 feet to 20 feet in length, from a large piled stack in the yard, when, owing to taking most of the rollahs from one side, the pile overbalanced, fell upon him and killed him. Inspection and inquiry made.
114	7th April, 6 A.M.	Dishargarh Mine, Dishargarh P. O.	Equitable Coal Co., Ld.	Santhu Baurin, (*f.*), 25, *Coal-carrier.*	Coal	Deceased was found drowned in a boiler feed water tank. As she was subject to epileptic fits it is surmised that a sudden attack rendered her helpless while she was bathing. Inspection and inquiry made.
115	1st August, 5-45 P.M.	Loyabad Mine, Bansjora P. O.	Barakar Coal Co., Ld.	Punia Pasin, (*f.*), 30, *Wagon loader.*	Coal	Deceased was drowned in a well used for drinking purpose.
116	30th September, 10-30 A.M.	Sodepur Mine, Sitarampur P. O.	Bengal Coal Co., Ld.	Shawan Barwala, (*m.*), 32, *Labourer.*	Coal	Deceased was killed by a fall of a portion of a gantry which was being dismantled. Inspection and inquiry made.
117	11th December, 2-30 P.M.	Aldih Mine, Sitarampur P. O.	Aldih Coal Co., Ld.	Abdul Rahman, (*m.*), 30, *Coolie.*	Coal	While a rope conductor was being lowered in a shaft 560 feet deep the chain lashing it to the cage broke and it ran down the shaft. Before two of the men assisting could stand clear the end of the conductor whipped them on the legs. Septicæmia set in and deceased died from the effects eight days later. Inspection and inquiry made.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Reason for exclusion.	Cause of accident and remarks.
			DEATHS NOT INCLUDED IN THE STATISTICS—(*30 deaths*).				
1	2nd January, 6 A.M.	Serampur Mine, Giridih P. O.	East Indian Railway Co.	Lachu Meah, (*m.*), 80	Coal	Not employed	It is surmised that deceased was washing himself when he fell backwards into the water and, being an old man, was unable to get out again. The tank was completely enclosed and its use forbidden. Inspection and inquiry made.
2	15th January, 4-30 P.M.	Shivrajpur Mine, Shivrajpur P. O.	Shivrajpur Syndicate, Ld.	Lumba Girdhari, (*f.*), 8.	Manganese	Not employed	Deceased was with her mother taking shelter during blasting operations when a small piece of rock projected from a shot struck her on the head and killed her instantly. Inspection and inquiry made.

3	23rd January, 10-15 A.M.	Jogta Mine, Sijua P. O.	Agabeg Brothers . .	Dulmhi Koiri, (*f.*), 65, *Cow-keeper.*	Coal . .	Not employed on the mine.	Deceased was crossing the siding with a cow. She was knocked down by a locomotive and full train as it was leaving the siding and was killed on the spot. Inspection and inquiry made.
4	9th February, 6-30 A.M.	Awlayheri Camp near Balaghat Mine. Kampti P. O.	Central Provinces Prospecting Syndicate, Ld.	Halki, (*f.*), 24, *Coolie.*	Manganese .	Not a mine accident.	Deceased fell into a well while drawing water and was drowned. She was subject to epileptic fits.
5	12th February, 4 P.M.	Kusunda Mine, Kusunda, P. O.	Kusunda and Nayadi Collieries, Ld.	? (*m.*), 1.	Coal . .	Not employed	As six loaded tubs were being drawn up through a cross measure drift, a coupling broke and four tubs ran wild, killing the child who was being carried by his sister aged eight years. *See Report, page 20.* Inspection and inquiry made.
6	16th February, 3-30 A.M.	Serampur Mine, Giridih P. O.	East Indian Railway Co.	Jadu Bauri, (*m.*), 21.	Coal . .	Not employed	Deceased was found on a broad gauge line, his head being completely severed from his body. From the disposition of the body and the absence of other injuries it is surmised that he committed suicide on account of recent total loss of eyesight. Inspection and inquiry made.
7	19th February, 12 Midnight.	Lakshmiganj Mine, Chora P. O.	Lakshmiganj Coal Co., Ld.	Rakhal Bauri, (*m.*), 10.	Coal . .	Not employed	Deceased went to drink water from an abandoned shaft and, falling in, was drowned. Inspection and inquiry made.
8	Probably 24th February, 1-30 P.M.	Jamadoba Mine, Jharia P. O.	Indian Collieries Syndicate, Ld.	Gufuran Bibi, (*f.*), 25, *Loader.*	Coal . .	Not a mine accident.	The body of deceased was found floating in a well by a woman who went to draw water. She had probably been in the water four days. Inspection and inquiry made.
9	23rd April, 1-30 P.M.	Rajhara Mine, Rajhara P. O.	Bengal Coal Co., Ld. .	Kabutri Burhi, (*f.*), 4.	Coal . .	Not employed	Deceased, following some distance behind its mother who had crossed a narrow-gauge line in front of a locomotive attached to a set of wagons, attempted to crawl under one of the wagons while the set was in motion and was cut in two. Inspection and inquiry made.
10	3rd May, 1 P.M.	Dobari Mine, Jharia P. O.	R. N. Bagchi . .	Bishu Bhatra, (*m.*), 5.	Coal . .	Not employed	Deceased, 5 years of age, playing near the line, fell or jumped on the rail as shunting operations were in progress and was crushed to death. Inspection and inquiry made.
11	6th May, 11 A.M.	New Surataur Mine, Jharia P. O.	J. L. Banerji & Co. .	Bidua Dosadhin, (*f.*), 15.	Coal . . .	Not employed	The body of deceased was found floating on the water in an excavation made on the surface 8 feet deep. As there were no marks of violence on her body it is surmised that she met her death by simple drowning. Inspection and inquiry made.
12	19th May, 12 Noon.	Bhulanbarari Mine, Jharia P. O.	Bhulanbarari Coal Co., Ld.	Bhato Gope, (*m.*), 21, *Trolleyman.*	Coal . .	On railway line.	While crossing a siding during shunting operations deceased was knocked down by an empty wagon and severely crushed. He died a few hours later. Inspection and inquiry made.
13	23rd May, 11-30 A.M.	Bhagaband Mine, Jharia P. O.	Borrea Coal Co., Ld. .	Pheranji Mushahir, (*m.*), 11.	Coal . .	Not employed	Deceased must have deliberately climbed the enclosing wall of a boiler feed water tank to bathe and, being unable to scale the wall from the inside, was drowned. There were no marks of violence on the body. Inspection and inquiry made.
14	26th May, 1 P.M.	Srikistopur Mine, Kalipahari P. O.	Baliram Coal Co. . .	Laki Majhain, (*f.*), 7 Durji Majhain, (*f.*), 7.	Coal . .	Not employed	Deceased were drowned whilst bathing in a boiler feed water tank. Inspection and inquiry made.
15	28th May, 5 P.M.	Waraigaon Mine, Kampti P. O.	Central India Mining Co., Ld.	Jama, (*f.*), 20, *Coolie.* Kaksia, (*f*), 1½.	Manganese .	Not a mine accident.	While cooking, the woman's clothes caught fire and, in attempting to get out of her hut, the flames spread to the hut and to the child who was sleeping in a cradle at the time.

Fatal Accidents, 1910—*concld.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Reason for exclusion.	Cause of accident and remarks.
			DEATHS NOT INCLUDED IN THE STATISTICS—*concld.*				
16	5th June, 2-30 P.M.	Brahmanbarari Mine, Jharia P. O.	East Indian Coal Co., Ld.	Morni Bhuain, (*f.*), 30. *Loader.*	Coal . .	On railway line.	During a storm a number of persons, amongst whom was deceased, took shelter under a wagon, deceased sitting on a rail with her back to a wheel. Suddenly a gust of wind caught a detached wagon, stationed 30 feet away, and drove it with considerable force into the wagon under which the people were sheltering and crushed her so severely that she succumbed shortly afterwards. Inspection and inquiry made.
17	17th June, 10 A.M.	Gopalichak Mine, Jharia P. O.	Gopalichak Coal Co., Ld.	Sanpotia Shah, (*f.*), 9.	Coal . .	Not employed	Deceased fell, unseen by any body, into an unprotected well and was drowned. As a bucket was subsequently found at the bottom of the well it is presumed that she went to draw water and missed her footing. Inspection and inquiry made.
18	3rd July, 12-30 P.M.	Sendra Mine, Bansjora P. O.	Sendra Coal Co., Ld.	Pankhi Bhuia, (*f.*), 8.	Coal . .	Not employed	Deceased strayed upon the line while shunting operations were in progress on a colliery siding and was run over by a wagon. Inspection and inquiry made.
19	12th July, About midday.	Jamuria Mine, Nandi P. O.	Equitable Coal Co., Ld.	Chowri Koiri, (*f.*), 24.	Coal . .	Not employed	Deceased was drowned in a boiler feed water tank where presumably she was bathing. Inspection and inquiry made.
20	13th July, 5-15 P.M.	Baraboni Mine, Charanpur P. O.	Ghusik and Muslia Collieries, Ld.	Hari Bauri, (*m.*), 9.	Coal . .	Not employed	Deceased was drowned in a well, which was properly fenced. Inspection and inquiry made.
21	15th July, 3 P.M.	Jamadoba Mine, Jharia P. O.	Indian Collieries Syndicate, Ld.	Hasa Roy, (*m.*), 6.	Coal . .	Not employed	Deceased was travelling along an endless rope haulage road in company with his grown up brother who had a baby in his arms, when he trod upon the moving rope and was thrown to the ground. Before the rope could be stopped a haulage clip attached by a chain to a loaded tub struck him a violent blow on the chest causing complicated fracture of the ribs. Inspection and inquiry made.
22	26th August, 9 A.M.	New Khas Jharia Mine, Jharia P. O.	R. J. Agarwala . .	Setola Chamarin, (*f.*), 16, *Coolie.*	Coal . .	Suicide .	After a quarrel with her husband deceased went to an old shaft full of water and jumped in. Inspection and inquiry made.
23	30th September, 1-30 P.M.	Miragpur Mine, Kampti P. O.	Central India Mining Co., Ld.	Mathola, (*f.*), 1.	Manganese .	Not employed	Deceased's mother was cleaning ore when the child wandered about 5 feet away and fell into a small pool 2 feet deep which was half full of water owing to the previous day's rain. The father seeing the child in the water rescued it immediately. It was then taken to the camp where it expired at 2-30 P.M.
24	1st October, 8-30 A.M.	Sijua Mine, Sijua P. O.	Sijua Coal Co., Ld. .	Somra Hari, (*m.*), 10, *Stone-picker.*	Coal . .	On railway line.	Deceased was run over by a train of coal wagons during shunting operations on the colliery siding. He received injuries to which he succumbed within a few hours. Inspection and inquiry made.

25	5th October, 1 A.M.	Napara Mine, Asansol P. O.	British Indian Coal Co., Ld.	Churna Beldar, (*m.*), 5.	Coal . .	Not employed	Deceased was returning home in the twilight when he fell into a feed water tank containing 4′ 9″ of water but was rescued before life was extinct. Artificial respiration was tried vigorously for half an hour without avail. The top of the retaining wall was only 6″ to 18″ above the level of the ground. *See Report, page 20.* Inspection and inquiry made.
26	7th October, 10 A.M.	Jamuria Mine, Nandi P. O.	Equitable Coal Co., Ld. .	Sukaldeo Choubey, (*m.*), 20, *Chaprassi.*	Coal . .	On railway line.	Deceased was injured by a train of empty wagons which was being backed into the siding as he was crossing the line at a recognised pathway. Rain was falling heavily at the time and it is surmised that a damaged umbrella which was found close by contributed to the accident. Inspection and inquiry made.
27	27th October, 6 P.M.	Sibpur Mine, Charanpur P. O.	Katras Jharia Coal Co., Ld.	Dhoni Majhain, (*f.*), 35, *Loading woman.* Mongal Majhain, (*f.*), 1½.	Coal . .	Murder and suicide.	A mother threw her baby and then herself into some water that had collected in an old incline cutting and both were drowned. Inspection and inquiry made.

APPENDIX II—*contd.*

Table No. 2.

Statement of fatal and serious accidents in and about the mines regulated by the Indian Mines Act, 1901, during the year 1910.

Province.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS.				SERIOUS ACCIDENTS.				Death-rate per 1,000 persons employed.		
			Number of separate fatal accidents.	Number of deaths.			Number of serious non-fatal accidents.	Number of persons seriously injured.					
				Below ground.	Above ground.	Total deaths.		Below ground.	Above ground.	Total number of persons injured.	Below ground.	Above ground.	Below ground and above ground.
						A.—COAL.							
Bengal	Hazaribagh: Bokaro-Ramgarh	95	...	...	...	...	...	...	...	...	...	...	...
	Hazaribagh: Bokaro-Jharia	52	...	...	...	...	...	...	...	...	...	...	...
	Hazaribagh: Giridih	6,762	2	1	1	2	3	2	1	3	·24	·38	·29
	Manbhum, Jharia	50,978	34	45	5	50	33	21	12	33	1·41	·26	·98
	,, Raniganj	5,201	31	52	3	55	4	1	3	4	14·91	1·75	10·57
	Bankura ,,	38	...	...	...	...	...	...	...	...	...	...	...
	Birbhum ,,	22	...	...	...	...	...	...	...	...	...	...	...
	Burdwan ,,	34,262	16	13	4	17	17	13	4	17	·57	·34	·49
	Sonthal Parganas, Raniganj	18	...	...	...	...	...	...	...	...	...	...	...
	,, ,, Rajmahal	29	..	...	...	...	...	...	...	...	...	...	...
	Palamau, Daltonganj	597	...	...	...	...	2	2	...	2	...	...	...
	Sambalpur, Hingir-Rampur	214	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	98,268	83	111	13	124	59	39	20	59	1·77	·37	1·26
Central Provinces	Chhindwara, Pench Valley	765	2	2	...	2	1	1	...	1	3·03	...	2·61
	Narsinghpur, Mohpani	966	...	...	...	...	1	1	...	1	...	...	...
	Chanda, Ballarpur	688	...	...	...	...	1	1	...	1	...	...	...
	TOTAL	2,419	2	2	...	2	3	3	...	3	1·13	...	·82
Panjab	Jhelum	1,224	3	3	...	3	3	2	1	3	3·98	...	2·45
	Shahpur	402	...	...	...	...	...	...	...	...	...	...	...
	Mianwali	156	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	1,782	3	3	...	3	3	2	1	3	2·57	...	1·68
Eastern Bengal and Assam.	Lakhimpur	1,911	12	27	...	27	3	3	...	3	22·46	...	14·12
Baluchistan	Sibi, Khost, etc.	891	4	4	...	4	6	5	1	6	7·07	...	49
	Loralai, Loralai	9	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	900	4	4	...	4	6	5	1	6	6·99	...	4·44
North-West Frontier Province.	Hazara	5	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (COAL)	105,285	140	147	13	160	74	52	22	74	2·18	·34	1·52
						B.—MICA.							
Bengal	Monghyr	300	...	...	...	...	...	...	...	...	...	...	...
	Hazaribagh	9,058	2	3	...	3	4	5	...	5	·59	...	·33
	Gaya	1,223	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	10,581	2	3	...	3	4	5	...	5	·49	...	·28
Madras	Nellore	2,720	1	2	...	2	2	4	...	4	1·13	...	·73
Rajputana	Ajmer-Merwara	200	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (MICA)	13,501	3	5	...		6	9	...	9	·63	...	·37

APPENDIX II—*contd.*

Table No. 2—*contd.*

Statement of fatal and serious accidents in and about the mines regulated by the Indian Mines Act, 1901, during the year 1910.

Province.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS. Number of separate fatal accidents.	FATAL ACCIDENTS. Number of deaths. Below ground.	FATAL ACCIDENTS. Number of deaths. Above ground.	FATAL ACCIDENTS. Number of deaths. Total deaths.	SERIOUS ACCIDENTS. Number of serious non-fatal accidents.	SERIOUS ACCIDENTS. Number of persons seriously injured. Below ground.	SERIOUS ACCIDENTS. Number of persons seriously injured. Above ground.	SERIOUS ACCIDENTS. Number of persons seriously injured. Total number of persons injured.	Death-rate per 1,000 persons employed. Below ground.	Death-rate per 1,000 persons employed. Above ground.	Death-rate per 1,000 persons employed. Below ground and above ground.
		C.—MANGANESE.											
Central Provinces	Nagpur	3,483	2	...	2	2	3	...	3	3	...	3·05	·57
	Bhandara	1,581	...	...	...	...	...	...	...	...	...	...	...
	Balaghat	2,459	2	2	...	2	1	..	1	1	·98	...	·81
	Chhindwara	566	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	8,089	4	2	2	4	4	...	4	4	·36	·77	·48
Madras	Vizagapatam	2,325	...	...	...	...	...	...	...	...	...	...	...
Bombay	Panch Mahals	853	2	13	...	13	4	3	1	4	38·69	...	15·24
	Ratnagiri	80	...	...	...	...	...	...	...	...	...	—	...
	GRAND TOTAL (MANGANESE)	11,347	6	15	2	17	8	3	5	8	1·97	·53	1·5
		D.—LIMESTONE.											
Central Provinces	Jabalpur, Katni	2,420	...	...	...	...	...	...	..	...	...	...	...
Panjab	Hoshiarpur	90	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (LIMESTONE)	2,510	...	..	...	...	...	...	..	...	...	...	...
		E.—SALT.											
Panjab	Shahpur	72	1	1	...	1	...	...	...	..	13·88	...	13·88
	Jhelum	820	...	...	...	...	11	11	..	11	...	...	...
	Mianwali	66	...	...	..	...	...	...	...	...	...	...	...
	GRAND TOTAL (SALT)	958	1	1	...	1	11	11	...	11	1·07	...	1·04
		F.—GEMS.											
Burma	Mogok (Rubies, etc.)	1,463	1	1	...	1	2	...	2	2	1·59	...	·68
Madras	Kurnool (Diamonds)	39	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (GEMS)	1,502	1	1	...	1	2	...	2	2	1·56	...	·66
		G.—SLATE.											
Bengal	Monghyr	170	...	...	...	...	1	1	...	1	...	...	...
Panjab	Kangra	275	...	...	...	...	...	...	...	...	...	...	...
	Gurgaon	172	...	...	...	...	1	...	1	1	...	...	...
	TOTAL	447	..	...	...	...	1	...	1	1	...	...	...
	GRAND TOTAL (SLATE)	617	...	...	...	...	2	1	1	2	...	...	...
		H.—GOLD.											
Bombay	Dharwar	337	...	...	...	...	1	...	1	1	...	...	...
Madras	Anantapur	1,186	2	1	1	2	1	1	...	1	1·60	1·77	1·68
	GRAND TOTAL (GOLD)	1,523	2	1	1	2	2	1	1	2	1·57	1·12	1·31

APPENDIX II —*contd.*

Table No. 2—*concld.*

Statement of fatal and serious accidents in and about the mines regulated by the Indian Mines Act, 1901, during the year 1910.

Province.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS. Number of separate fatal accidents.	FATAL ACCIDENTS. Number of deaths. Below ground.	FATAL ACCIDENTS. Number of deaths. Above ground.	FATAL ACCIDENTS. Number of deaths. Total deaths.	SERIOUS ACCIDENTS. Number of serious non-fatal accidents.	SERIOUS ACCIDENTS. Number of persons seriously injured. Below ground.	SERIOUS ACCIDENTS. Number of persons seriously injured. Above ground.	SERIOUS ACCIDENTS. Number of persons seriously injured. Total number of persons injured.	Death-rate per 1,000 persons employed. Below ground.	Death-rate per 1,000 persons employed. Above ground.	Death-rate per 1,000 persons employed. Below ground and above ground.
		I.—IRON.											
Bengal	Singhbhum	641	...	...	...	...	...	...	...	...	...	...	...
		J.—WOLFRAMITE.											
Central Provinces	Nagpur	93	...	...	...	...	...	...	...	...	...	...	...
		K.—MAGNESITE.											
Madras	Salem	900	...	...	...	..	1	...	1	1	...	...	...
		L.—CHROMITE.											
Baluchistan	Quetta-Pishin	8	..	...	...	...	...	...	...	...	...	...	...
		M.—COPPER ORE.											
Bengal	Singhbhum	2,840	...	...	...	...	...	...	...	...	...	...	...
		N.—FULLER'S EARTH.											
Central Provinces	Jabalpur	*	...	...	...	...	...	...	...	...	...	...	...
		O.—CLAY.											
Central Provinces	Jabalpur	112	...	...	...	...	...	...	...	...	...	...	...
		P.—GALENA.											
Burma	Mandalay	2,621	...	...	...	...	1	1	...	1	...	...	...
		Q.—TIN.											
Bengal	Hazaribagh	11	...	...	...	...	...	...	...	...	...	...	...
Burma	Maliwan	60	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Tin)	71	...	...	...	...	...	...	...	...	...	...	...
		R.—STEATITE.											
Central Provinces	Jabalpur	110	...	...	...	...	...	...	...	...	...	...	...
Madras	Kurnool	10	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Steatite)	120	...	...	...	...	...	...	...	...	...	...	...
		S.—GRAPHITE.											
Madras	Vizagapatam	31	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (All minerals)	144,680	117	170	16	186	107	78	32	110	1·89	·29	1·29

* Figures included along with that of Limestone.

APPENDIX II—*contd.*

Table No. 3.

Statement of fatal accidents in mines regulated by the Indian Mines Act, 1901, during the year 1910, classified according to the age and sex of the workers.

Mineral.	Province and mineral field.	Number of separate fatal accidents.	Number of deaths. Below ground. Adult males.	Below ground. Adult females.	Below ground. Children (under 12).	Below ground. Total.	Above ground. Adult males.	Above ground. Adult females.	Above ground. Children (under 12).	Above ground. Total.	Total below and above ground.
Coal	Baluchistan	4	4	...	...	4	...	...	...	...	4
	Bengal — Daltonganj	...	...	...	...	...	...	...	...	...	...
	Bengal — Giridih	2	1	...	...	1	1	...	...	1	2
	Bengal — Jharia	34	36	9	...	45	4	1	...	5	50
	Bengal — Raniganj	47	52	13	...	65	5	2	...	7	72
	Total (Bengal)	83	89	22	...	111	10	3	...	13	124
	Central Provinces	2	1	1	...	2	...	...	...	...	2
	Eastern Bengal and Assam	12	26	1	...	27	...	..	...	...	27
	Panjab	3	3	...	...	3	...	...	...	...	3
	Total Coal	104	123	24	...	147	10	3	...	13	160
Mica	Bengal	2	3	..	...	3	...	...	...	...	3
	Madras	1	2	...	...	2	...	...	...	...	2
	Total Mica	3	5	...	...	5	...	...	...	...	5
Manganese	Central Provinces	4	2	...	...	2	1	1	...	2	4
	Bombay	2	9	2	2	13	...	...	...	...	13
	Total Manganese	6	11	2	2	15	1	1	...	2	17
Salt	Panjab	1	...	1	...	1	...	...	...	...	1
Gems	Burma	1	1	...	...	1	...	...	...	...	1
Gold	Madras	2	1	...	...	1	1	...	...	1	2
Grand total, all minerals		117	141	27	2	170	12	4	...	16	186

APPENDIX II—*concld.*

Table No. 4.

Statement of fatal accidents in mines regulated by the Indian Mines Act, 1901, during the year 1910, classified according to cause of accident.

Mineral worked.	Number of separate fatal accidents.	Number of persons killed.											Death-rate per 1,000 persons employed.		
		Explosions of fire-damp.	Falls of roof.	Falls of side.	In shafts.	By explosives.	Suffocation by gases.	Irruptions of water or falling into water.	Haulage.	Miscellaneous below ground.	Surface.	Total deaths.	Below ground.	Above ground.	Below and above ground.
Coal . . .	104	27	51	16	18	5	...	6	16	8	13	160	2·18	·34	1 52
Mica . . .	3	...	1	4	...	...	...	...	...	...	...	5	·63	...	·37
Manganese .	6	...	...	12	...	3	...	...	...	...	2	17	1·97	·53	1·5
Salt . . .	1	...	...	...	...	...	...	...	...	1	...	1	1·07	...	1·04
Gems . . .	1	...	...	...	1	...	...	...	...	...	...	1	1·56	..	·66
Gold . . .	2	...	...	...	1	...	...	...	...	...	1	2	1·57	1·12	1·31
Total 1910 . .	117	27	52	32	20	8	...	6	16	9	16	186	1·89	·29	1·29
Total preceding year.	126	6	31	26	30	5	...	3	16	10	25	152	1·40	·49	1·08
Difference . .	—9	+21	+21	+6	—10	+3	...	+3	...	—1	—9	+34	+ ·49	—·20	+ ·21

APPENDIX III.

PROSECUTIONS UNDER MINES ACT.

Statement of Prosecutions instituted under the Indian Mines Act, 1901, during the year 1910.

PROVINCE.	District.	Number of prosecutions.	Number of persons prosecuted.	Number convicted.	REMARKS.
Bengal	Hazaribagh . .	1	1	1	
Do.	Manbhum . .	1	1	1	
Do.	Do. . .	1	1	.....	

APPENDIX IV.

MISCELLANEOUS.

Statement No. 1.

List of Inspection Circles.

No. 1 Circle.	No. 2 Circle.	No. 3 Circle.
(*a*) All mines in the districts of Palamau, Gaya, Monghyr, Singhbhum, Darjeeling, Ranchi and Sambalpur, and all mines other than coal mines in the district of Hazaribagh, and all mines in the district of Manbhum, which are situated west of a line drawn from Adra Junction at mile 175 of the Bengal Nagpur Railway to Gobindpur at mile 169 on the Grand Trunk Road and continued across the district in each direction.	(*a*) All mines in the districts of Burdwan and Bankura to the west of a line drawn from mile 131 on the East Indian Railway main line near Asansol to mile 141 on the Ondal loop near Gaurangdi, and continued across the districts in each direction; and all mines in the district of Manbhum east of a line drawn from Adra Junction at mile 175 on the Bengal-Nagpur Railway to Gobindpur at mile 169 on the Grand Trunk Road, and continued in each direction across the district, and all coal mines in the district of Hazaribagh.	(*a*) All mines in the districts of Burdwan and Bankura to the east of a line drawn from mile 131 on the East Indian Railway main line near Asansol to mile 141 on the Ondal loop near Gaurangdi, and continued across the districts in each direction, and all mines in the districts of the Sonthal Parganas and Birbhum.
(*b*) All mines in Assam.	(*b*) All mines in Baluchistan.	(*b*) All mines in the Presidency of Bombay.
(*c*) All mines in Burma.	(*c*) All mines in the United Provinces.	(*c*) All mines in the Central Provinces.
	(*d*) All mines in the Panjab.	
	(*e*) All mines in Ajmer-Merwara.	(*e*) All mines in the Presidency of Madras.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 2.

List of holders of certificates as Managers of Coal Mines in British India.

(*a*) Certificates granted to holders of English certificates of competency.

FIRST CLASS.

NAME.	No. of Indian certificate.	Date of Indian certificate.	No. of English certificate.	Date of English certificate.
Whitworth, Charles Stanley . . .	148	7th February 1910 .	2326	8th January 1904.
Webster, Gerald Cecil . . .	149	Ditto . . .	3034	1st July 1907.
Husband, Robert	150	Ditto . . .	3325	24th February 1909.
Elphinstone, William Spencer . .	151	30th March 1910 .	2581	28th April 1905.
Dufton, Frank	152	12th September 1910	2756	27th February 1906.
Gibson, Ernest	153	Ditto . .	3495	30th October 1909.
Wilson, James	154	Ditto . .	3028	14th June 1907.

SECOND CLASS.

Press, William G.	19	21st November 1910.	6563	11th June 1908.

(*b*) Certificates of service.

FIRST CLASS.

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Haloo, Ramji	135	12th September 1910.	

(*c*) Certificate of competency.

FIRST CLASS.

Ashcroft, Charles Edwin	54	30th March 1910.	
Dennis-Jones, Allan A.	55	Ditto.	
Wilkinson, Ronald	56	Ditto.	

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SECOND CLASS.

Ghosh, Satyendra Nath	53	30th March 1910.	
Akone, J. P.	54	Ditto.	
Johnston, John Munroe	55	Ditto.	
Wise, Thomas Louis George . .	56	Ditto.	
Bhattacharya, Bhaba Charan . . .	57	Ditto.	

APPENDIX IV—*contd.*

MISCELLA NEOUS.

Statement No. 3.

List of Universities and Colleges in England and India approved by the Governor General in Council for the purposes of Rules 32 and 33 under the Indian Mines Act, 1901.

Name of Institution and Degree or Diploma.	Date.
University of Birmingham in respect of its Degree of B.Sc. in Mining and Diploma in Mining.	11th June 1904.
University College of Bristol in respect of its Senior Diploma in Mining.	16th September 1904.
University of Cambridge in respect of its Diploma in Mining Engineering.	6th June 1905.
University of Durham in respect of its Degree of B.Sc. in Mining	21st December 1903.
Durham College of Science in respect of its Diploma in Mining .	29th June 1904.
University of Glasgow in respect of its Degree and Diploma in Mining.	28th September 1904.
Glasgow and West of Scotland Technical College in respect of its Diploma in Mining.	28th June 1904.
University of Leeds in respect of its Degree of B.Sc. in Mining and Diploma in Mining.	21st November 1904.
University of London in respect of its B.Sc. Degree in Mining for Internal Students, subject to the Degree being endorsed by the University with a certificate of four months' practical experience in a mine.	9th June 1905.
University of London in respect of its B.Sc. Degree in Mining for External Students, subject to the Degree being endorsed by the University with a certificate of four months' practical experience in a Mine.	7th August 1906.
Royal School of Mines in respect of its Associateship in Mining .	24th March 1904.
University of Oxford in respect of its Diploma B. for Colliery Engineers (in Scientific Engineering and Mining subjects).	11th February 1905.
University College of Sheffield in respect of its Diploma in Mining.	15th July 1904.
University College of South Wales and Monmouthshire in respect of its Diploma in Mining.	19th April 1904.
Wigan Mining and Technical College in respect of its Diploma in Mining.	26th August 1904.
Civil Engineering College, Sibpur, in respect of its Diploma in Mining.	22nd February 1907.
Merchant Venturers' Technical College, Bristol, in respect of its Diploma in Mining Engineering.	5th October 1905.
Victoria University of Manchester in respect of its Degree and Certificate of Mining.	14th February 1906.
University College of Nottingham in respect of its Diploma in Mining Engineering.	28th March 1906.
University of Sheffield in respect of its Degree of Bachelor of Engineering. (Mining).	30th June 1906.
Heriot-Watt College in respect of its Certificate in Mining Engineering.	16th January 1908.
Calcutta University in respect of its Degree of Bachelor of Engineering in the branch of Mining Engineering.	24th September 1910.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 4.

SIBPUR COLLEGE.

The Mining Classes.

CIRCULAR.

These classes are attached to the Overseer Section of the Apprentice Department.

General explanation.—The Mining Classes are designed to afford theoretical training in the principles of mining generally, to prepare students for positions of responsibility in coal or metal mines, and in the case of students attending for instruction in coal mining, to qualify them to appear for the examinations of mine managers, as required by the Indian Mines Act, VIII of 1901.

The course at Sibpur for regular mining students will extend over four years. At the end of the second year the sub-overseer examination is held. The specialised instruction in mining at Sibpur is given in the third and fourth years of the college course, according to the attached syllabus, and the diploma examination takes place at the end of the fourth year.

The classes are open to both regular students and special students.

Regular students—Are those who have qualified for admission by passing the sub-overseer examination of the Civil Engineering College, or an equivalent test of other colleges.

Their age limits are 17 years minimum and 19 years maximum on admission.

Special students.—Persons resident in Bengal, who have been employed upon mines, will be admitted as special students under the following conditions:—

(*a*) that they have completed at least two years' practical work upon a mine; and

(*b*) that they have passed (*i*) the B. Final Examination, (*ii*) the Matriculation or Entrance Examination of any Indian University, or (*iii*) any test equivalent to the Middle School Examination of the Code for European Schools.

There is no limit of age for such special students.

All applications for admission from outside candidates should be posted so as to reach the Principal's office by 1st April.

Regular students should apply in the proper form available from the Principal's office.

Special students must provide, (*a*) proof of educational attainments, and (*b*) a statement showing the nature and extent of their employment upon mines and the period thereof, supported by certificates from the mine managers under whom they have worked.

Scholarships awarded by the Government of Bengal.

For regular students.—Two scholarships of Rs. 12 monthly and three of Rs. 6 are provided. These will be awarded on the results of the sub-overseer examination by the Director of Public Instruction on the recommendation of the Principal. Students trained at the Civil Engineering College or any affiliated technical school in Bengal are eligible for these scholarships. If they are on the Reduced fee list, they will be charged full tuition fees.

For special students.—Two scholarships of Rs. 150 monthly for European candidates and two of Rs. 50 monthly for Indian candidates, each tenable for two years, are offered. These will be awarded annually by the Director of Public Instruction on the recommendation of the Mining Advisory Board.

These scholarships are available for candidates who have had at least two years' actual experience of colliery work. They must have passsed the Calcutta University Entrance Examination or an equivalent. For Europeans the Middle Scholarship Examination of the Code for European Schools or equivalent is accepted.

There is no limit of age.

Application for these scholarships should be made to the Principal of the Civil Engineering College, when applying for admission.

There is no residential accommodation available at the college for special students, scholarship-holders or otherwise: they must make their own arrangement for board and lodging, and must attend the college daily from 8 A.M. A mid-day meal will be supplied if desired at the college at a definite monthly charge to be fixed by the Principal.

Scholarships awarded by the Government of Eastern Bengal and Assam.

For regular students.—Three of the value of Rs. 15, one being reserved for each of the following classes, namely, European, Muhammadan and Hindu, confined to students domiciled in Eastern Bengal and Assam.

Statement No. 4—*contd.*

For special students qualified as above.—One of Rs. 30 for an European. Two of Rs. 20— one for a Muhammadan and one for a Hindu. The rates for special students are fixed on the understanding that they will reside at the college hostel. If accommodation is not available, Government are prepared to consider an increase. Applications for these scholarships to be made to the Director of Public Instruction of Eastern Bengal and Assam.

The session begins each year on or about the first Monday in May. The college closes for the long vacation about the first week of August and re-opens about the end of October.

Special students must pass all college test examinations and must appear at the diploma examination held at the end of the course.

The following fees will be charged from special students :—

Caution money deposit.—Rs. 5, which will be returned on leaving the college after deducting any charge-dues owing.

Tuition fee.—Rs. 3 monthly payable for 12 months in the year.

Mid-day meal.—Rs. 10 monthly for Europeans, and Rs. 5 for Indians.

All fees become due on the 15th of the month.

Regular students, who must be residents, will be charged in full the fees noted in the Rules of the Apprentice Department.

A camp of practical mining and surveying will be held for six weeks in the cold weather of each session in the colliery districts.

SYLLABUS OF MINING COURSES.

Course I.

Geology applied to Mining.—(One lecture per week.)

Classification of rocks: characteristic fossils and economic products of the principal systems.

Structure of rocks; foldings, faults, cleavage, formation of mineral veins.

Principles of geological surveying: methods employed in constructing geological maps and sections. Special reference to the geology of India.

Mining Engineering.—(Two lectures per week.)

Boring by hand and power machines.

Sinking and lining shafts; various methods employed in special cases.

Systems of haulage, underground and aboveground, aërial ropeways.

Hoisting, headgear, ropes, safety appliances.

Mining legislation.

Section A.—(One lecture per week.)

Methods of working coal, shaft pillars, preliminary work, and various methods of working the seams. Special reference to thick coal working as practised in England and different parts of the world.

Shot-firing; coal-cutting by machinery.

Surface subsidence and under-sea working.

Timbering and other supports.

Coal mine plans and sections, connecting surface and underground surveys.

Section B.—(One lecture per week.)

Prospecting for and methods of working mineral veins.

Alluvial mining and open workings.

Hydraulic mining; dredging for gold; ore-beds and deep leads overhand and underhand stopping.

Hand and power drilling; blasting, timbering.

Metal mine plans.

Course II.

Descriptive Mineralogy.—(One lecture per week.)

Physical properties of minerals; description of various ores and fuels; methods of determination.

Prospecting operations.

Mining Engineering.—(Two lectures per week during first-half of session.)

Drainage of mines; adit levels; pumping machinery; dams; boring against old workings.

Ventilation of mines; natural and artificial ventilation; splitting and regulating air-currents; types of fans; water-gauge and anemometer.

Power-application in a mine; discussion of relative merits of steam, water, compressed-air, electricity and oil, as sources of applied power.

Section A.—(One lecture per week.)

Description of gases found in coal mines; colliery explosions; safety lamps; instruments for detecting fire-damp; treatment of men overcome by foul air.

APPENDIX IV—*contd.*

Statement No. 4—*concld.*

Arrangement of surface works at a colliery ; sorting and screening coals ; coal-washing, briquette making, coking and bye-products.

Section B.—(One lecture per week.)

Surface works of metal mines, sorting, crushing, sizing, and concentration of various ores. Modern ore-dressing machinery, and slime tables.

Special reference to treatment of gold, silver, copper, lead and zinc.

Cyanide and Chlorine treatment of slimes.

Statement No. 5.

MINING INSTRUCTION IN BENGAL.

RANIGANJ AND JHARIA COALFIELDS.

Lectures for session 1910-11 will be delivered throughout the session at the following centres :—

1. Lecture room near Sijua station on Mondays at 6-30 P.M.
   Lecturer—Mr. S. McMurtrie.
2. Lecture room near the Jharia Club on Tuesdays at 5-30 P.M.
   Lecturer—Mr. S. McMurtrie.
3. Lecture room at Messrs. Apcar and Company's Charanpur Colliery on Thursdays at 5-30 P.M.
   Lecturer—Mr. H. C. Read, B.SC. (BIRM.)
4. Lecture room near Dishargarh Club on Wednesdays at 5-30 P.M.
   Lecturer—Mr. L. A. Jacobs, B.SC. (DUN.)

The course of instruction consisting of about 25 lectures, will commence in November 1910. At the end of the course an examination will be held and candidates who pass the examination will receive a certificate recording their success. No candidate will, however, be permitted to sit for examination, unless he has attended fifty per cent. of the lectures.

All Europeans and English speaking Indians are cordially invited to attend.

The Mining Advisory Board desire that colliery managers will kindly publish this information in their collieries, and use their influence to maintain a regular attendance of the students.

Particulars of the Sibpur College Mining Classes and of the scholarships connected therewith may be obtained from the Principal.

The following Sub-Committees have been appointed for each centre.

RANIGANJ DISTRICT.

Dishargarh Centre.

Mr. G. C. Leach (Chairman).
„ Geo. Miller.
„ F. Owen.
„ W. J. Rees.
Babu M. N. Roy (Begunia).
„ H. P. Mukherji (Chota Dhemo).
The Local Lecturer (Secretary).

Charanpur Centre.

Mr. G. C. Leach (Chairman).
„ R. Mitchell.
„ E. M. Patterson.
„ A. Russell.
Babu Rajoni Prokash Chuckerbutti.
„ Surendra Nath Sarkar.
The Local Lecturer (Secretary).

JHARIA DISTRICT.

Jharia Centre.

The Chief Inspector of Mines (Chairman).
Mr. J. J. Turnbull.
„ R. J. Browne.
„ A. S. Thomson.
Babu Bhupati Mukherji.
„ Sita Nath Dutta.
The Local Lecturer (Secretary).

Sijua Centre.

Mr. R. R. Simpson (Chairman).
„ A. Agabeg.
„ W. Hutton-Williams.
„ E. S. Bennertz.
Babu Lalit Mohan Chowdhuri.
The Local Lecturer (Secretary).

APPENDIX IV—*concld.*

Statement No. 5—*concld.*

SYLLABUS OF THE COURSE OF INSTRUCTION.

THE course will treat principally of the more practical operations in actual mining, with special reference to India, and the principles underlying such operations will be thoroughly discussed. Special attention will be paid to the various methods of working thick seams.

At the close of each lecture questions will be set for home work.

FIRST YEAR COURSE.

Geology.—General structure of the crust of the earth: Definitions and descriptions of fault, dyke, outcrop, dip, strike, unconformity, etc.; composition and properties of coal; special reference to the coal measures in India: Importance of recording results of observations.

Exploration.—Advantages of borings; driving through faults, washouts, dykes, etc.; methods of maintaining the direction and gradient of such drivages.

Boring and Winning.—Different systems of boring; choice of methods; cost of boring. Winning coal by inclines, adits, shafts, shafts and crosscut.

Sinking.—Site of colliery; position of shafts, excavation and shape; blasting with use of safety fuse and electric battery; explosives and detonators, their safe storing and handling; lining the shafts and scaffolding; sinking pit banking arrangements, bowks, waterbarrels, bull chain and hook, etc. Special difficulties in sinking and how to deal with them.

Opening out and methods of working.—Shafts pillars; arching or supporting the pit bottom; quarrying; pillar and stall; double road stall; long wall.

Thick coal.—Methods of working in South Staffordshire and Warwickshire, in Upper Silesia and France; methods of working thick seams by long wall, by inclined slices, and by horizontal slices, also the Rabatage System.

Timbering and Supporting.—Fixing of props and double timber; chocks or cogs, special methods of timbering to withstand pressure from the roof, sides and floor; securing dangerous holes in the roof due to heavy falls; use of iron or steel girders; stowing and packing; arching.

Gases met with in coal-mines.—Their experimental preparation by chemicals and illustration of their physical and physiological properties; methods of detecting; explosion and gob fires.

Ventilation.—Natural and artificial methods; coursing the air; use of stoppings, brattices, doors, airbridges, regulators, etc.; measuring the quantity of air, use of thermometer, barometer, water-gauge, anemometer; the friction of air in mines and the elementary theory of splitting.

Safety lamps.—Theory of the safety lamp, Sir Humphrey Davy's Experiment; the Davy lamp, the Clanny and Thomas and Williams lamps, the Marsaut and Mueseler lamps; firedamp detectors.

SECOND YEAR COURSE.

Mechanical Engineering of Collieries.—Winding engines, discussion of the different types, calculation of the dimensions of cylinders, length of stroke, diameter of drum, etc.; strength of winding ropes and chains, detaching hooks, capping winding ropes, care and examination of ropes.

Pumping.—Importance of a good system; measurement of quantities of water; lifting and forcing pumps; pumps for sinking; temporary and permanent pumps; calculation of dimensions of pumps to perform a given duty, etc.; strength of pipes, methods of supporting, different types of joints.

Hauling.—Tramways, tubs and wagons; conveyance by self-acting inclines; single-rope haulage; main and tail; endless rope; endless chain; calculations concerning inclines, sizes of haulage engines, ropes, etc.; signalling; capping of haulage ropes.

Surface arrangements.—Boilers; Cornish, Lancashire, and water-tube types; boiler fittings, injectors, and steam-pipes, etc.; boiler explosions, incrustation, corrosion, and priming; calculations on boilers; Heap-steads; arrangement of roads around pit bank; simple screening and sizing.

Transmission of power by steam, compressed air, and electricity; discussing the relative merits of each system.

Coke.—Its production and composition; different types of ovens; recovery of bye-products.

A. DU PRÉDENNING,

Supdt. of Industries and Inspector of Technical Education.

Department of Mines, India.

REPORT

OF THE

CHIEF INSPECTOR OF MINES IN INDIA

Under the Indian Mines Act (VIII of 1901)

FOR THE

YEAR ENDING 31st DECEMBER 1911

BY

G. F. ADAMS,

Chief Inspector of Mines in India

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FROM

G. F. ADAMS, ESQ.,

Chief Inspector of Mines in India,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
DEPARTMENT OF COMMERCE AND INDUSTRY.

Dated Dhanbaid, 5th June 1912.

SIR,

I have the honour to submit the report upon the inspection of mines in British India for the year ending 31st December 1911.

EXPLANATORY INTRODUCTION.

It is necessary to explain that this is a report relating entirely to the administration of the Indian Mines Act, 1901, and is not a complete statistical review of Indian Mining and analogous industries. It should be remembered in reading the statistics that there must be a considerable output from quarries which are under 20 feet deep; and owing to the exclusion of such places from the scope of the Mines Act, these figures should not be regarded as a complete index to the production of the mineral wealth of the country.

Figures of production of all minerals raised in British India and the Native States, whether from workings under the Act or not, are published annually in the Records of the Geological Survey of India, whilst every five years a Quinquennial Review of the Mineral Production of India is issued by the same Department. The latest review published is that for the years 1904-1908 (Records, Geological Survey of India, Vol. XXXIX). Figures for Mysore, where most of the Indian gold is raised, are given in the report of the Chief Inspector of that Native State, and mineral statistics may also be found in the administrative reports of the various Presidencies, Provinces and States of India.

This report is divided into five sections, *viz.* :—

Section I.—Persons employed.
„ II.—Output of mineral.
„ III.—Accidents.
„ IV.—Prosecutions and additions to the Act.
„ V.—General remarks.

Section I.—Persons employed.

During the year 1911 the average number of persons working in and about the mines regulated by the Indian Mines Act was 146,336 of whom 93,656 worked underground and 52,680 on the surface. Ninety-two thousand and forty-eight of the persons were adult males; 48,971 were adult females and 5,317 children under 12 years of age. This is an increase of 1,656 workers or 1·14 per cent.

There was a small increase in the number of those employed in coal mines, and this holds good also as regards the coal mines of Bengal, where the great majority of the work people were employed, and where, although labour was scarce and most managers could have employed more work people, had they

been forthcoming, there was no acute "labour question" as in some previous years. The increases and decreases in the various classes of other mines will be found in Appendix I, Table 1.

Generally speaking, there was an improvement in the condition of the mineral industry of India in 1911 as compared with 1910.

Labour was again reported to be scarce at the manganese mines in the Nagpur District of the Central Provinces.

At the coal mines of the Assam Railways and Trading Company, in addition to the labour which has been imported for many years from the Central Provinces and Chota Nagpur, the experiment has recently been tried of employing Chinese, Nepalese and Mekranis from Baluchistan. The two latter are the more satisfactory.

At the Cape Copper Company, Limited's copper mine, which was commenced about four years ago, the machine and hand drill men were at first entirely imported from Southern India. Gradually the local Santhals have been taught this work and are now able to compete both at the machine and as hammermen.

Section II.—Output of mineral.

COAL.

There was an increase in the output, which was 12,048,726 tons, and which, compared with 11,387,716 tons raised in 1910, is an increase of 5·80 per cent. In 1910 there was an increase of 0·83 per cent.

Of the total 11,468,904 tons or 95·19 per cent. were raised in Bengal, the rate in the previous year being 94·64. In this Province there was an increase of 691,598 tons, which exceeds the increase for the whole of India, which was 661,010 tons. The increase comes mainly from the Jharia coalfield, where there has been an increase of over half a million tons or just 10 per cent. There were increases of 2·35 and 3·70 per cent. in the Raniganj and Giridih coalfields, respectively, and a decrease, mainly from Palamau, of 13·22 per cent. in the smaller coalfields.

In the North-West Frontier Province, where the output is infinitesimal, there was an increase of 55 per cent. In the other Provinces outside Bengal there were decreases as follows:—Assam ·74 per cent., Baluchistan 2·29 per cent., the Central Provinces 4 per cent. and the Panjab 37·84 per cent.

The coal trade generally was better than in 1910 and improved throughout the year. Owing to a late harvest and consequent scarcity of labour in Bengal during the autumn, the year closed without much accumulated stock at the collieries.

The output per person employed during the year was (*a*) below ground 174 tons, and (*b*) above and below ground 113 tons. The figures for the three years preceding were (*a*) 163 and (*b*) 104. Taking each group of coalfields separately these figures were as follows:—Bengal (*a*) 178 and 165, (*b*) 114 and 105; the Central Provinces (*a*) 132 and 118, (*b*) 92 and 81; Assam (*a*) 243 and 255, (*b*) 150 and 162; Baluchistan (*a*) 79 and 67, (*b*) 50 and 45, and the Panjab and North-West (*a*) 32 and 44, (*b*) 20 and 27. It will be seen that, except in Assam and the Panjab, there is a marked improvement in this respect. The average in England for the ten years ending in 1910 was 287 tons per person employed above and below ground.

MICA.

There was a large increase in the output, which was 31,686 cwts. compared with 21,375 cwts. raised in 1910. This is an increase of 10,311 cwts. or 48·23 per cent. and restores mica to the place of importance it occupied in 1909.

The increased supply was undoubtedly due to improved condition of trade. It was however unable to keep up with the demand for slab mica. The year

opened in Europe with shortage of stocks and with demand gradually improving. This improvement continued throughout the year and was accompanied by an increase of prices, gradual at first, but advancing considerably towards the close of the year. This increase was specially marked in the prices of medium sizes.

The trade in splittings, which promised well at first, was not so good, especially in inferior grades, the fall in the prices of which depressed those of all but the very best qualities.

The gradual exhaustion of the outcrop workings is compelling some owners to introduce more modern methods of working. Already vertical shafts, well timbered or supported by masonry, are being sunk to reach the veins below the old workings, steam and hand pumps are superseding old fashioned methods of unwatering the mines, winches are taking the place of swing poles to raise the mineral, and manual labour is being economised generally.

MANGANESE ORE.

The output of manganese ore was 441,426 tons, compared with 468,669 tons in 1910, being a decrease of 27,243 tons or 5·81 per cent. The increase recorded for 1910 has not therefore been maintained, and it appears that, although the price per unit of ore remained unchanged at about nine pence, the condition of the industry in 1911 was depressed. Few besides the larger companies carried on their operations, small concessionaries being in many cases unable to work, as the prevailing low rate and want of demand did not admit of their working at even a nominal profit. The values, as received from the mine owners, show a slight, but very slight, advance on those received for 1910.

GEMS.

There was an increase of nearly 10 per cent. in gems, the output being 288,216 carats, while in 1910 it was 262,032 carats. With the exception of 3 carats the entire output is from the ruby mines in Burma. There was very little demand in Europe for the larger and finer qualities, what inquiry there was being entirely for the smaller and cheaper sizes. In India, however, while the finer qualities were in small demand, there was quite a brisk market, chiefly in Madras, for all the inferior qualities, at prices which maintained their level throughout the year.

GOLD.

The output was 8,277 ounces, compared with 3,269 ounces in 1910. This is an increase of 5,008 ounces or 153 per cent. Of the total, however, 2,993 ounces were extracted from the mill tailings of ore raised in previous years in the Dharwar goldfield, but not previously entered in the returns. These mines are now definitely closed down and the tops of the shafts sealed over.

In the last Annual Report I wrote that hopes were entertained of better prospects in the Anantapur district of Madras, and I am glad to be able to say that material progress has been made. There is still only one mine in the producing stage; this more than doubled its output last year, having reached a depth of 575 feet and having a battery of 20 stamps at work. A second mine has, however, been extensively developed to the southern point of the field to a depth of 705 feet, and electric plant has been ordered for hoisting and pumping and for driving the surface plant, the power for which will be generated by two duplicate sets of oil engines. The producing stage is not expected to be reached till 1913. A large increase in the European staff has been made recently in this field owing to the development that has taken place.

SAMARSKITE.

It should be noted that 24 cwts. of samarskite, valued at Rs. 1,329, were extracted from a mica mine in the Nellore district in Madras.

OTHER MINERALS.

There were increases in limestone, iron, copper, salt, slate, wolframite, fuller's earth, steatite and corundum and decreases in magnesite, Jabalpur clay, galena, graphite, chromite, and tin.

Section III.—Accidents.

GENERAL REMARKS.

During the year 1911, at mines regulated by the Indian Mines Act, 1901, there were 137 fatal accidents, being an increase of 20 as compared with the number in 1910 and an increase of 11 as compared with the average number of the last three years.

These accidents involved the loss of 174 lives. This is a decrease of 12 upon the number of deaths in 1910. In that year, however, 55 deaths were the result of 5 accidents, whereas in 1911 only 2 accidents caused more than 3 deaths. In one case 14 persons and in the other 4 persons were killed.

The death rate per thousand employed was 1·18, that of the preceding three years being 1·18. At coal mines only these figures were 1·38 and 1·32, and at mines other than coal ·66 and ·77. At coal mines in England, during the ten years ending with and including 1910, the death rate per thousand employed varied from 1·24 (lowest) to 1·69 (highest).

The death rate per million tons raised at coal mines only was 12·28, that of the preceding three years being 12·74. At coal mines in England, except in 1909 and 1910, when explosions, causing loss of life on a large scale, occurred, and when the death rate per million tons of coal raised was 5·23 and 6·37 respectively, the rate has not reached 5 since 1895.

Of the persons killed 137 were males and 37 were females.

The deaths occurring in each class of mine worked were as follows :—

One hundred and forty-eight in coal mines; 10 in mica mines; 4 in manganese mines; 1 in salt mines; 1 in wolframite mines; 6 in gold mines; 1 in limestone mines and 3 in copper mines.

Seventeen persons lost their lives by explosions of fire-damp; 94 by falls of roof and sides; 13 in shafts; 7 by explosives; 2 by suffocation of gases; 1 by irruption of water; 19 by haulage; 5 by other accidents underground and 16 on the surface.

A list of these accidents appears in Appendix II, Table 1. In addition to them there were 23 others causing the death of 23 persons. These also appear in Appendix II, Table 1, but are listed separately, a reason being given in each case for their exclusion from the statistical tables.

Sixty-seven per cent. of the statistical accidents and sixty-eight per cent. of the deaths occurred in the Bengal coal mines. Of the persons employed in them, 53 per cent. were employed in Jharia, where, in 1911, 65 per cent. of the accidents in these coal fields occurred. Accidents have largely increased in Jharia. Having averaged just under 43 in number for the previous three years, they rose in 1911 to 60, the great majority of them being caused by falls of roof and sides, which continue to be the most fruitful source of accidents generally, and which are now assuming large proportions. In the year under review they formed 54 per cent. of the total number of fatal accidents, the rate for the preceding three years being 41 per cent.

These figures appear to me to call for serious consideration on the part of colliery owners and managers.

A study of each individual accident shows that many lives would have been saved by the exercise of greater vigilance on the part of the subordinate officials, and more frequent inspections of the roof and sides of all roads open to traffic and of all working places. It is not enough for officials to casually glance at a place for the purpose of detecting dangerous conditions. A systematic examination should be made with a stick or sounding pole and what is of equal impor-

tance is that immediate action should be taken when danger is discovered, either by removing it or by securely fencing the place; and whenever possible the officials should personally see that any instructions they may give for securing the roof or sides are actually carried out.

Inexperience on the part of the miners still contributes towards many of these accidents. It is well known that, unlike the miners in England, they rarely examine their working places either before they start work or at any period during the shift. This indifference will take time to eradicate, but much good would be done, as is done at some mines, in the direction of educating them to protect themselves, if the officials insisted on all miners sounding their working places themselves at each inspection by the officials and saw that any danger observed was remedied on the spot.

In the last Annual Report reference was made to supervision generally. In 1911 there were twenty-three fatal accidents which were due to lack of proper supervision. This matter is referred to in another portion of this report when commenting on individual accidents.

Pillar robbing and working in unauthorised places, which is largely due to defective supervision and discipline, were responsible for nineteen fatal and three serious accidents. When breaches of discipline, such as these, are detected, fines are usually inflicted, and it is hoped that the impending introduction of the special rules for coal mines to be made under section 21 of the Indian Mines Act, which have now been agreed upon between the officers of this Department and a committee representing the general body of managers in Bengal, will strengthen the hands of managers in this respect.

There were 124 serious (non-fatal) accidents, causing injury to 136 persons.

Three serious fires broke out in coal mines in Bengal during the year. The first case occurred at the East Indian Coal Company's Brahmanbarari mine in the Jharia coalfield. The seam affected was No. 15 seam, which is 26 feet in thickness and was being worked by inclines from an outcrop 4,400 feet in length to a maximum distance of 2,200 feet on the dip. The area is split up by barriers of solid coal into three sections of which the north section contains 14 acres, the south section 67 acres and the west or dip section 14 acres. The whole of the area has been divided up by galleries into pillars 50 feet square. These galleries are of the full height of the coal, *i.e.*, 26 feet.

In 1909 goafing, or the extraction of the pillars, was commenced in both the north and south sections and some 12 acres of these were subsequently got. Owing to the great thickness of the seam, however, it was not possible to obtain complete extraction and portions of the pillars had to be abandoned and became crushed in the goaf. Conditions favourable for spontaneous combustion were thus set up and in February 1911 a small fire broke out in the goaf of the north section. This was kept within bounds by flooding and eventually sealed off by brick stoppings.

Warned by this occurrence, the management proceeded to divide up the south section into six panels by means of brick stoppings in dykes and at other convenient points. Before the work was completed, however, a second and independent outbreak of fire was discovered on the edge of a goaf in this section of the workings. Efforts were at once made to cut out the burning material but, just when success appeared to be in sight, heavy falls of roof drove back the workers and compelled the abandonment of the attempt some days later. Meanwhile the goaf had been surrounded by canvas stoppings and the work of reinforcing these with brick was proceeding. A second line of brick stoppings was also being built in the limited openings through a dyke, which traverses the south section and divides it roughly into two halves. Meanwhile the products of combustion were finding their way to the surface through fissures in the subsided ground, but later heavy rains fell and caused a reversal of the air

current, and the smoke was driven back on the workers to such an extent that all work underground had to be stopped, and eventually nearly all the inclines and air pits on the outcrop were emitting smoke and in some cases large sheets of flame. As soon as work underground in No. 15 seam became impossible attention was directed to the salving of No. 14A seam, which is 7 feet in thickness and lies 10 feet below No. 15 seam. All openings between the two seams were dammed off and complete isolation secured. Meanwhile all the openings to the surface in No. 15 seam were gradually closed by earth filling and the fire was then brought under control. It is satisfactory to record that no lives were lost during the conduct of the salvage operations. On one occasion five work people were overcome by foul gases and, but for the prompt action of the manager and staff, would undoubtedly have lost their lives.

It is also of interest to note that subsequent salvage operations, skilfully contrived and boldly executed, have resulted in the recovery of more than 50 per cent. of the area originally lost.

The second case occurred at the Tareni Coal Company's Haripur mine, where a fire broke out in some old workings. It spread with rapidity throughout the mine, and, the pillars being very small and the coal lying at a shallow depth, the whole mine soon collapsed and was lost. This fire also spread to the adjoining mines of Babu B. L. Chatterji and the Baraboni Coal Concern, Limited, on the west and east, respectively, the intervening barriers being too thin to withstand the strain set up by the collapses. The former mine was saved by the building of a few brick stoppings but the latter had to be closed down. Salvage operations have lately been commenced, but, as they have not been completed, they will be referred to in the next Annual Report.

The third case occurred at the East Indian Coal Company, Limited's Kenwadih mine. The salvage operations attempted were attended by an explosion which is reported on in another portion of this report. The mine has not yet been reopened.

Each fatal accident is briefly described in Appendix II, Table 1, but the following are reported on at greater length. The numbers refer to the numbers in the Appendix.

EXPLOSIONS OF GAS.

No. 1. Bengal Iron and Steel Company, Limited's Ramnagar coal mine.

This mine which was a new one, consisted of a single inclined gallery which had been driven down from the surface in a southerly direction for 427 feet, on the full dip of the seam, which is 1 in 8. At a distance of 260 feet a gallery had been driven off on the west side for 35 feet, and, at a distance of 407 feet, another gallery had been driven off, also on the west side. This lower gallery was 100 feet long by 6 feet high by 5 feet wide at the entrance, diminishing to 4 feet square at the face, and was rising slightly towards the face. It was intended to sink a shaft to join the workings at the face of the lower gallery, to form a second outlet for the mine.

The seam is 12 feet thick and is supposed to be a detached portion of the Laikdih seam, which is 100 feet thick.

The incline was driven with the object of proving the property on the rise side of a large fault, so that it partook of the nature of an exploration drift. On the other side of the fault the seam has been developed on a large scale, the workings extending for more than half a mile on the strike and 1,100 feet to the dip.

The workings of the larger mine had nearly reached the fault. Neither in them nor in the new mine had any trace of fire-damp ever been seen or

suspected. This fact had led the management to drive the incline and two levels mentioned without any system of artificial ventilation and, as there was only one outlet, no natural ventilation could be set up. There was a steam pump in the upper level and the heat from it, when at work, and the subsequent cooling, when it was stopped, would cause a slight movement of air in the incline from this level to the surface but below the upper level the air, except as far as ventilation could be effected by diffusion, must have been stagnant, as is the case in portions of so many mines in Bengal.

Both the old and new mines were worked with naked lights.

Only 12 persons worked in the mine, in two gangs of 6 persons each, and each gang worked 24 hours at a stretch. The last gang to work in the mine before the explosion worked in the lower level and left the mine at 6 A.M. Two hours later the sirdar and a banksman went below to attend to the loaded tubs and returned to the surface without entering the level. They both carried naked lights.

At 10 A.M. a fresh gang of three men and three women entered the mine with naked lights, and advanced into the level in single file. When the leading man, named Sambhu Roy, had travelled about half way along the lower level an ignition of gas occurred, accompanied by a rumbling sound as of thunder, flame flashed along the gallery and a rush of air was created, which lifted the men's clothes at the mouth of the incline 450 feet away. All the persons sustained burns about the upper portion of their bodies, but no other injuries. The severity of the burns varied with the position of the persons in the file, the leading three being affected most. One of the three, a girl of 12 years of age, died the following day.

All the evidence showed that there was no report at the moment of ignition, and since there were no signs of explosive force in the mine it is clear that the accumulation of gas was neither large nor dense. As no incrustations of coke could be found anywhere, it is presumed that the explosion was purely a fire-damp one.

The source of the accumulation was undoubtedly a "feeder" that had been liberated by the cutting of coal at the face of the level during the last shift worked. So long as the workers were actively engaged in cutting and carrying, diffusion of the gas would be facilitated to such an extent that the mixture would be kept below ignition point: but on their retirement rapid diffusion would cease and gas would collect. Had the admission of the next shift been delayed a few more hours the death roll in all probability would have been much greater than it was.

No gas could be detected in the mine two hours after the explosion, but next morning Mr. G. C. Leach, the Inspector in charge of the Circle, found a slight trace at the entrance of the level, and a gas cap in the safety lamp, $\frac{1}{2}$ inch in height, near the roof at a distance of 30 feet inbye of the entrance. At this time the level had three feet of water in it.

As regards supervision it appeared that the manager inspected the mine once a week, the assistant twice and a sirdar daily. There appeared to have been no laxity in this respect.

Owing to the total absence of gas in the mine, since it started, the use of naked lights was justified, so that the only feature that raises comment is the neglect to provide ventilation. This neglect constitutes a breach of rule 14 (Coal Mines Code), but, inasmuch as the danger arising from the presence of gas could not possibly have been foreseen, the breach was a technical one and I consider no one is to blame. Had the danger been realized and then disregarded the breach would have been serious.

It is obvious, now that gas has asserted itself, that work in future will have to proceed on different lines. An adequate amount of ventilation will have to be produced before work is resumed, and, even if naked lights are not entirely prohibited in the mine, at least all examinations must be made with safety lamps. The manager has given an assurance that these precautions will be taken.

No. 2. Bengal Nagpur Coal Company, Limited's Gangutia coal mine.

This accident is unique in the annals of Indian Mining and under other circumstances might have had very disastrous results. Two men, carrying naked lights, made an attempt to retrace their steps to the surface through some extensive abandoned workings, through which they had entered the mine, without authority. They lost their way and entered a place full of fire-damp, which ignited at their lights, and caused an explosion resulting in their deaths.

The mine is a large one, working the Sanctoria seam, and dates back to the earliest days of which there is any official record. There are numerous inclines and shafts spread over the property, but only one of each is now in use, the incline being used for raising coal and travelling, and the shaft for pumping and for a second outlet in case of emergency.

The two deceased operated a pump situated at the bottom of this shaft, which is known as the Sanctoria shaft, and were accustomed to travel to it, twice daily, down the incline for a distance of 1,440 feet and along a level 1,500 feet long.

As the Sanctoria shaft was not a very suitable second outlet the manager sent his assistant, with a sirdar and two miners, to try to discover a road through the old workings from the Sanctoria shaft to an old incline known as No. 2. After a tortuous journey they emerged from No. 2 old incline and reported that a road was open. The news appeared to have reached the ears of the deceased, for a week after they decided to make the journey themselves, as this road reduced the distance from the surface to their working place by 2,000 feet.

Their voices were last heard about 3 P.M., calling from the bottom of the Sanctoria shaft to the firemen at the surface to give them steam. About two hours later several people, including the firemen, saw leaves and dust being blown out of an old shaft, situated between the Sanctoria shaft and No. 2 old incline, and some trees growing from the side of the shaft shaking violently. One of them, thinking that an explosion or heavy fall had occurred, hastened to inform the sirdar and on his way met several miners emerging from the working incline with their lights extinguished.

When it was ascertained that the deceased were missing, the manager was advised and a rescue party was formed at once of all the officials and six or seven miners, who carried four safety lamps and six naked lights. As the manager had convinced himself that an explosion had occurred, this proceeding was the height of rashness and might have resulted in the loss of the party.

The search commenced at 7-15 P.M. and ended without effect at 1-15 A.M. It was resumed at 6-45 A.M. the same morning and terminated at 10-30 A.M. by finding the bodies in the extreme west workings. Two open kerosine lamps were found near them and also a number of bamboo fencing poles, around one of which one man had his arms entwined. Both bodies were severely burnt from head to foot and the hair of both was singed, showing the flames must have been intense and must have filled the roadway and not merely been confined to the upper part. The bodies did not show signs of much violence. There were a few lacerated wounds about the head of one, but no bones were broken. Death appeared to have been instantaneous in both cases, for the bodies were found on the fringe of the accumulation.

It was found on investigation that the deceased had come to the surface, had afterwards entered the mine by No. 2 incline and had endeavoured to find their way through the old workings, making chalk marks on the sides of the pillars, to act as a guide for them when making the return journey. At a distance of about 250 feet from the Sanctoria level the marks ceased, but a guide to the level was provided by the sound made by a small waterfall that was known to the deceased to be situated on the rise side of the level along which they travelled daily. It is more than probable that they used this as a guide and consequently ceased to mark the pillars. They apparently forgot, however, that the sound would be of no avail in locating their last mark when they came to retrace their steps. Whether this is so or not, it is clear that

they never found their last mark, for they wandered off towards the west, oblivious of the fact that the workings there contained gas.

The only entrance into the old workings from the present workings before the explosion was through a small hole in a stopping covered by a brattice cloth. All the other roads were closed by stoppings built of stone and mud. In every case these were demolished by the force of the blast. Large stones that had been projected by the force were found deeply embedded in the props and three props at one point were knocked out. Further along the level on the out-bye side the timber and pillars were heavily encrusted with unburnt moist coal dust. There was not the slightest trace of coking owing to the very wet state of the level. Had the mine been dry and dusty the explosion probably would have been propagated throughout the workings of the mine and a heavy toll of life taken, as the mine was full of people at the time.

The gas which caused this explosion was so far removed from the working places and travelling roads of the mine as to render it harmless to the persons in the working portion of the mine, and consequently the manager cannot be blamed for not having it kept cleared, but the particular lesson inculcated by the accident is the danger that must always be present where a large accumulation of gas, accessible by any means to the workmen of a mine, exists. If it is impossible to remove such an accumulation nothing less than completely isolating the area with stoppings should be attempted. Except for the small hole in one of the stoppings this was actually the case here, and I do not consider that any one, except the deceased themselves, were to blame.

No. 3. East Indian Coal Company, Limited's Kendwadih coal mine, Nos. 2, 3 and 5 shafts.

For the first time in the history of the Jharia coalfield, I regret to have to report an explosion, which resulted in the death of fourteen persons.

There are three seams worked from these shafts, being, in descending order, Nos. 14, 13 and 11. The explosion occurred in No. 13 seam, which varies in thickness from 16 to 25 feet and lies at a depth of 210 feet. No. 14 seam is 26 feet 6 inches thick and No. 11 seam is 18 feet thick. The workings and the positions of the shafts are shown on plan A. It will be seen that Nos. 2 and 3 shafts are close to one another. The workings in their vicinity were those affected by the explosion.

The colliery was worked with naked lights and no trace of fire-damp had ever been detected.

On the afternoon of the 6th November the European assistant was told that two women had been ill near an old goaf situated to the rise of the pits, from which the pillars of coal had been removed. This goaf is marked "FIRE AREA" on plan A. He did not, he says, suspect that their illness was due to foul gas, and there is no particular reason why he should have done so.

On the morning of the 7th, however, several work people, on proceeding to work in No. 11 seam, were overcome by foul gas and it was evident that a fire had started somewhere underground. This was traced by the management to the goaf above mentioned. No sign of actual fire was visible but white vapour was seen and the west side of the goaf was found to be warm. There was a smell of firestink near the junction of the jig road with No. 2 pit main level, about twenty feet up the jig road.

This rise goaf district had been getting warm for some time and no work had been carried on there for five or six months before the explosion. About two months previously some stoppings had been erected on the south side of the No. 2 shaft main east level, which the management state had had the effect of cooling the district considerably.

The agent arrived at the colliery at midday on the 7th and it was decided to attempt to dam off the fire by erecting brick stoppings. All the fire stoppings which were subsequently erected and those which would have been erected if the explosion had not occurred are shown in red on plan A, the old ventilation stoppings being shown in black. During the night the old ventila-

tion stopping at A, which was half way up, was knocked down and a stronger one commenced. A stopping at D was also commenced.

On the following morning, the 8th November, Mr. R. R. Simpson, Inspector of Mines for No. 1 Circle, to whom information had been sent, arrived at the mine. He made an inspection, accompanied by the agent and the manager. They examined the fire area and found smoke in the roof cavities at several points. They then passed through the fault by a drift into No. 11 seam, where the work people had been overcome the day before. They passed rapidly through the galleries, finding the firestink very strong and being to some extent physically affected by it.

A consultation was then held. The agent had on the previous day considered the feasibility of building stoppings round the fire area and then closing the area by a stopping in the rise connection in No. 11 seam. He had however, abandoned the idea on account of the number and large size of the stoppings required and had arranged for stoppings at A, B, D and E. The building of the first three of these had been commenced, and it was finally agreed upon between the agent and Mr. Simpson that, as No. 3 shaft was the upcast and as there was slight firestink on the east level leading from this shaft, these four stoppings should be completed first and that then, if practicable, other stoppings should be built as shown on plan A.

Stoppings at A, B and D had already been commenced, and the work of erecting that at E was now commenced. An attempt was made, first to construct the latter with tins full of sand, but the work could not be completed, owing to foul air. For the same reason the work at D had to be given up. It was then decided to finish B, to take out the old stopping there and complete the stoppings at D and E from that side. It was subsequently found that a new stopping had also to be built at C and this work was commenced also. The old stopping at C was taken down during the night.

The manager descended No. 2 shaft at half past seven the following morning, the 9th November. The stoppings at A, B and D were completed. That at C was three feet from the roof, and that at E was as it had been left the previous day, about half way up in a gallery 10 feet high.

He returned to the surface at half-past eight, and a few minutes afterwards an explosion occurred. A vast cloud of dust was emitted from No. 2 shaft (downcast) to a height of about 200 feet. No. 3 shaft also sent out a cloud of dust, and native witnesses affirm that dust came up No. 5 shaft also.

The cages at No. 2 shaft were found to be jammed, but those at No. 3 shaft were clear, but the shaft was upcasting, and was emitting smoke and strong firestink. The cages were kept going up and down and in about half an hour two men came up. Just at the top one fell off and fell down the shaft. The other was rescued but subsequently died.

By this time one cage was cleared in No. 2 pit and about an hour and a half after the explosion a rescue party, consisting of the manager and Mr. Simpson, went down in it and seven survivors, more or less injured, were brought to the surface. Shortly afterwards Mr. Simpson, with two of the European assistants, again went down. They reached No. 3 shaft and brought out two injured men that way. Another injured man was shortly brought up by a party headed by the agent, who arrived shortly after the explosion and who again descended at noon with the manager and Mr. Simpson and brought up the last survivor.

On the following day, the 10th, the bodies of the nine persons who had been killed outright by the explosion were brought to the surface. The body of the man who fell down No. 3 pit was also recovered.

It was then considered that further exploration must entail risk to life and that nothing further should be attempted. With this opinion I quite agreed when I arrived at the mine from tour on the evening of the 10th. The pits were sealed down and have not yet been reopened.

At the time of the explosion sixteen men and five women were underground. Of these four men and all the women were killed outright, one man

fell down the pit when coming up and was killed, and eleven men were rescued alive. These last were all badly burnt, and four of them died subsequently.

The total death roll was therefore nine men and five women.

The positions of the bodies as found are shown on plan B. This plan also shows the positions of the survivors, those who subsequently died being distinguished from those who recovered, the approximate positions of all persons at the moment of the explosion, as far as could be gleaned from the evidence, and the directions in which the stoppings were blown by the force of the explosion. The numbers are as are entered in Appendix II, Table 1.

The general direction of the ventilation of the mine after the outbreak of the fire is shown on plan A. It must not however be inferred that there was an appreciable current of air moving in the directions shown by the arrows. In the great majority of the mines in the Bengal coalfields, in which no fire-damp is found, the air current is very feeble, ventilation practically being effected by diffusion. In this particular case the old ventilation stopping at A was only commenced a few days before the explosion and, as has been stated, was taken down when only half built to make room for the new fire stopping. In the absence of a ventilation stopping at this point, the air would tend to be short-circuited up this gallery and very little would go up the gallery to the east of B. As a matter of fact the firestink, although most of it was taken by the air current into No. 11 seam, did to a certain extent find its way down on the east side to the No. 3 shaft (upcast) east level. It was owing to this that the building of the stoppings at D and E had to be temporarily abandoned on the 8th.

As regards the actual cause of the explosion, all who were concerned in it hold the opinion that the explosion originated at the fire, and with that opinion I agree. The directions of the force, as shown by the red arrows on plan B, distinctly tend to show that the force came from inbye of the fire stoppings, blowing them all except one towards the pit. The fact that they were blown out in this way goes to show that such force must have been very considerable, an additional proof of which is furnished by the fact that all those found dead had sustained injuries in addition to being burnt.

The only possible alternative theory is that gas found its way back over the unfinished stopping at E and was ignited by a naked light carried by one of the persons near it. I do not consider that in such a case the force would have been so clearly indicated in one direction. No fire-damp had ever been seen in the mine and it is evident that such explosive mixture as was present was distilled by the fire, which would be the nearest and the most obvious means of igniting it. I would here invite reference to the last Annual Report, in connection with an explosion at Namdang mine in Assam. I quoted the case of a similar occurrence at Charanpur mine in Bengal and stated that, although in most of the coal seams in India fire-damp may not be detected in ordinary working conditions, yet, when these seams are on fire, explosions of gas, the exact composition of which cannot be ascertained, are liable to occur. Moreover the fact that the manager went to every fire stopping with a naked light and found everything in order within half an hour of the explosion tends to show that it was not caused by a naked light.

I consider the theory that the gas was ignited by the fire is the more probable and the more natural one.

Two facts stand out: firstly, that the order in which the stoppings were completed undoubtedly had the effect of preventing oxygen getting to the fire, but at the same time did not prevent the products of combustion being carried away from the fire into No. 11 seam. The stopping at A was closed on the afternoon of the 8th, that at B at half-past ten that night and that at C at quarter to six next morning, about three hours before the explosion. Secondly, that very shortly after these dams were closed, an explosion did occur.

I quote the following from Robert Lamprecht on "Recovery work after pit fires," translated from the German by Charles Salter:—

"When a section of a mine is to be isolated by building dams in two headings one above the other, the question arises which dam shall be put in

first. Experience and theory indicate that when the burning section is one that carries fire-damp, the upper level is the one that should be first shut off. Demanet gives the following particulars of a report drawn up by the experts engaged in extinguishing a fire at the Agrappe colliery (Belgium) :--

'"When the upcast airway is closed, the products of combustion are held' 'back and become mixed with the air that makes its way to the seat of the fire.' 'Concurrently a liberation of fire-damp occurs in the burning section and tends' 'to form explosive mixtures with the incoming air, a tendency that is however' 'neutralised by the combustion products, the presence in the proportion of only' '10 per cent. being sufficient to prevent explosion. On the other hand, if the' 'intake airway is closed first, and the products of combustion are allowed to' 'escape without restriction, their lightness enables them to disperse readily,' 'whilst the air in the burning section becomes impregnated with the fire-damp' 'and the formation of an explosive mixture becomes inevitable."'

"Certain precautions should be observed in finally closing up the dam. For example, as the fire usually continues to burn for some time longer, until the supply of oxygen in the enclosed air is entirely consumed, the resulting gases would exert considerable pressure unless they found some way of escape. On the other hand, any indraught of fresh air, in consequence of the cooling down of the imprisoned atmosphere, must be guarded against, or the fire may revive; and again, as has frequently happened during recovery work in Hungarian collieries, dangerous explosions are liable to occur if the outflowing gases are checked too suddenly."

"In Belgian pits the following precautions are adopted :—In the upper part of the dam is placed an elbow pipe, which dips into a vessel continuously supplied with water through a pipe fitted with a tap, which is turned on so that the vessel slowly fills with water, the men thus having time to withdraw. By this means the outflow of gas is gradually checked and finally stopped, in proportion as the pressure of the water column overcomes that of the gas. Subsequently the surplus water merely overflows and runs away, or else the tap is turned off by the men on their return. In addition, this arrangement affords a continuous indication of the progress of the fire, by the volume and nature of the gases escaping from the bent pipe and through the water; and finally, when the atmosphere in the burning section contracts on cooling, water alone and not air is drawn into the rear of the dam. For this purpose the water tap must, of course, be left open wide enough to supply a sufficiency of water to the vessel."

At the time I would have agreed with what Mr. Simpson and the agent proposed. But from each of these events something may be learnt and if the work had to be done again under similar conditions, it would, I now think, be wise to attempt to put in first the stoppings in the rise workings shown on plan A, which would have been built if the explosion had not occurred, and also the stopping at E, all being on the return side of the fire. If that was impossible, and it very likely would be impossible, owing to firestink, it might be possible to choke back temporarily the products of combustion on to the fire by erecting brattice sheets to enable these stoppings to be built. If however that could not be done, it would perhaps be best to build the stoppings at A, B and C, being on the intake side, three quarters of the way up, and then see if matters were improved at all on the return side of the fire, and, if so, to build and finish off the stoppings there before completing those on the intake side, in this way preserving the *status quo* at the fire as long as possible. Although I do not consider that this particular explosion was caused by a naked light, still, as a precautionary measure, safety lamps only should be used when building stoppings to dam off fire.

An explosion having taken place at the fire, it is probable that it was augmented by dust on the way. It has been noticed several times how very small a quantity of dry dust will so augment the force of an explosion. Although opportunities for exploring and taking observations after this explosion were very few, the agent has informed me that he saw coked coal dust on one of the timber props near No. 2 shaft.

The work of extinguishing fires is at all times difficult and sometimes hazardous, and, owing to the fact that in most of the thick coal seams in Bengal not only are there no panels or barriers of coal left but the floor coal has been cut throughout the workings, necessitating the erection of stoppings of a very large size, the difficulty and danger in these mines are increased.

Pillar cutting is a natural development of our system of work and will be more extensively practised in the future than has hitherto been the case. It is impossible not to leave a certain amount of coal behind in the goaves in this operation. This coal is crushed by the falling roof and spontaneous combustion, in the majority of seams in this country, is inevitable. By the judicious arrangement of panels and stoppings all the pillars in the panel can in most cases be got before fire breaks out and, in the event of fire, the effects can be minimised and only a portion of the mine need be temporarily abandoned. The question of arranging panels, or at any rate leaving the floor coal uncut along certain definite lines in all seams exceeding 8 feet thick, so that fire stoppings, to form panels, can be quickly built at a low cost is, in my opinion, the most important question now before the mining community of Bengal, both from the point of view of danger to life and of loss of property.

FALLS OF ROOF AND SIDES.

No. 9. Hariladih Coal Company, Limited's Kenwadih coal mine.

This accident occurred near the broken edge of a recently formed goaf from which the timber had just been drawn. The European assistant had ordered the sirdar to fence the place and then proceeded elsewhere. While the sirdar was searching for wire for the fence, a timbering coolie asked him if he might return to the goaf to get some timber. The sirdar declared that he refused this request. As soon however as his back was turned, the coolie entered the goaf and, while he was there, a pane of roof shale, 3′ 0″×2′ 9″×4″, fell upon his right foot, causing a compound fracture of it. He died in four hours.

The accident would not have occurred if the sirdar's orders had been obeyed. It is noteworthy what little control the subordinate officials in many mines exercise over the miners. They are often sufficiently well-trained to detect dangers, but they lack the power to enforce their orders. Discipline cannot be expected from the miners if the sirdars are not disciplined, and this seems to be a matter that should receive more attention from managers than it does.

That such a comparatively slight accident should terminate fatally in four hours time shows the remarkable low state of vitality possessed by some of the workmen. With the exception of the injury to the foot and an incised wound on the skull, there were no other injuries. The victim was carried to the surface and to his house close by, where the colliery doctor attended to him. The doctor states that he was summoned almost as soon as the accident occurred and arrived at the house at the same time as the deceased. Even at this stage he found signs of collapse and a very feeble pulse, due to shock. He treated him for shock but was unable to restore vitality. Bringing the man from the warm mine into the cold air (it was evening), without well wrapping him up, may have aggravated his condition, and this leads on to the contention that injured persons would stand a better chance of surviving if they were left underground until the doctor was called.

No. 17. Babu Brojo Bhusan Trigunait's Ramkanali coal mine.

Taking advantage of the absence of the sirdar, who had gone to the surface to eat his midday meal, three men passed through a fence and began to rob coal from the corner of a pillar. While doing so, they were killed on the spot by a fall of roof stone, 38′ by 4′ to 15′ by 10′.

There was no official in the mine at the time of the accident. The practice of allowing sirdars to leave the mine at midday without being relieved by other

officials is responsible for many accidents from pillar robbing. It is a practice to which many managers have put an end, and it is to be hoped that insistence on the precaution of always having an official underground when miners are at work will soon become universal.

No. 24. Equitable Coal Company, Limited's Dishargarh colliery.

In this case a woman was killed by a fall of about a ton of coal, which occurred in the main shaft level, only 40 feet from the shaft. It was stated by the assistant and by the head sirdar that they examined this road by sounding the roof with a stick on the morning of the accident. It is difficult to conceive that the roof should have passed from a condition of soundness to one of collapse in so short a time in the total absence of any contributing cause. Owing to the presence of a steam pump the place was steamy, but it had been in this condition for years and therefore the steam would not have any sudden effect. The examination, if any was made, must have been of a perfunctory nature. Main roads, often being far distant from the actual working places, are apt to receive scanty attention at the hands of the supervising staff. It is just as important that they should receive careful inspection as the working places.

Although the roadway at this place was of the unusual width of 22 feet, there was very little artificial support, only a prop being set here and there. That the management are not heedless of the future safety of their people when once their attention had been called to the defect is shewn by the precautions they have taken since. Two rows of cogs—one on each side of the road—have been built for a considerable distance along the road with props between them and also in the middle of the road and the roof lined with steel rails and covering boards. The sides are being lined with brickwork. There is hardly a square foot now unsupported, but it is reprehensible that these precautions were not taken before, as they were obviously necessary.

No. 29. Burra Dhemo Coal Company, Limited's Burra Dhemo coal mine.

This accident was due to neglect to remove a danger as soon as it was discovered. Four persons were making their way out of the mine, when a piece of shale, measuring 4′ by $2\frac{1}{4}$′ tapering from 10″ to 8″ thick, fell from the roof near the side of a gallery and struck one of them. He died twelve hours later. Another man was seriously injured but recovered.

The seam is 4′ 6″ thick and immediately above it is a band of shale of a treacherous nature. Unless the shale is got down as the coal is extracted timbering has to be resorted to. Four roof dressers are specially employed to take down the shale and at this place it had been taken down over the middle of the gallery, but a little had been left near the sides.

During his inspection on the day before the accident the day sirdar detected the insecure nature of the roof and marked it with chalk for attention, subsequently instructing a roof dresser to take it down. These chalk marks were still on the fallen stone after the accident. The roof dresser stated that he attempted to get the stone down, but failed. This is unlikely. The night sirdar stated he tested the roof at this place that night and found it good. This is also unlikely. The roof must have been insecure the whole time and should have been taken down or the place fenced off.

The day sirdar had not informed the night sirdar of the danger. This raises an important point in supervision. Each sirdar should personally make over charge to his successor and state exactly where danger, if any, has been observed and what steps have been taken to remove it. Men of the calibre of sirdars naturally will not do this unless trained to do so by their superior officers.

No. 30. Indian Collieries Syndicate, Limited's Jamadoba coal mine.

The seam is 7′-3″ in thickness and is cut up into pillars, 40′ to 50′ square, by galleries 10′ to 12′ wide. "Broken" working was going on and some 12

pillars had been extracted by the process of splitting each pillar into 4 or 6 stooks or knobs, which are then removed in turn. Timber is used in abundance and as each stook is extracted the timber is drawn off. The work is supervised by an experienced European miner and by sirdars.

Three miners were engaged in taking out the last stook of a pillar. The stook had been reduced to about 6′ × 10′, when a sudden weight came on and it was rent asunder. It is probable that the removal of this support initiated a fall on the goaf edge, which rapidly involved the whole area by swaying out the timber in the direction of the dip. Only one man escaped by running out. Two men and a woman were caught under the very edge of the fall and were killed on the spot.

As the result of consultation with the general manager the following additional precautions for safety were agreed upon :—

(1) No "broken juds" are to be allowed to stand on timber over a week end.

(2) When the roof does not fall at the time the timber is drawn off, no further work is to be done on that pillar except under the supervision of the manager or European assistant.

(3) The final stage of reducing a pillar or stook is not to be done on the night shift. The place is to be fenced off for the night and the reducing of the stooks only done in the day shift, when the mines are under the supervision of the European staff.

(4) Special attention is to be given to the timber in pillar workings to see that it is wedged up tight.

No. 31. Hariladih Coal Company, Limited's Kendwadih coal mine.

A miner was found working in the face of a fenced off gallery and was sent out by the sirdar. Shortly after he returned and recommenced work and was killed by the fall of a slab of roof, measuring 5′-3″ by 2′-4″ by 6″.

About 7 tubs of coal had been worked in this place without the knowledge of the officials. As this is the equivalent of three days' work, it is evident there was want of proper supervision. The contractor and both the company's sirdar and contractor's sirdar were fined after the inquiry had been held.

No. 32. Sudamdih Coal Company, Limited's Sudamdih coal mine.

Two miners went through a fence and had no sooner begun to rob coal from a pillar than about a ton of coal and stone fell from the roof and killed them on the spot.

The sirdar had been through the workings just before the miners came to work, but had not had time to visit this place again. He had to look after half of the workings of an extensive colliery and inspect in two different seams. The inspector holding the inquiry was quite of the opinion that the supervision of the mine was inadequate, and pointed out in his report that he had to complain of the same defect when inquiring into an accident the previous year. The mine was then under another manager.

The fall occurred in a gallery twenty-five feet high. The necessary examination of roof and sides is extremely difficult in galleries as high as this. It is proposed to work this mine in future on a different system which will obviate the making of such high galleries.

No. 34. Bengal Coal Company, Limited's Murulidih coal mine.

A gang of seven stone cutters were engaged in blasting down roof and building a pack wall with the rock so obtained. While building, a stone, 7′ × 2′ × 2′, fell from the edge of the ripping upon one of them and he was killed

on the spot. He was only 16 years of age and had only three months' experience of mining. Boys of practically no experience should not be employed on such work. The accident occurred at night and the only supervision employed by the company was that of a sirdar, who had twenty-two gangs of miners in two areas of "broken" work to look after in addition to this gang. He naturally would spend most of his time supervising "the broken." The accident might have been avoided if the supervision had been closer.

No. 37. Assam Railways and Trading Company, Limited's Tirap coal mine.

The coal band being worked was 8′ in thickness and the dip was 25°. Roadside pillars were being got and the road at this place had been widened to form a "chamber," 14′ by 11′ by 7′ high. A miner was engaged in getting down roof coal with a long crow bar and shouted a warning that the coal was going to fall. He retreated, but a sirdar shouted that there was no danger and went towards a tub, which was on the rails close to the "bolt hole" or entrance to the "chamber."

The coal fell and with it came a thickness of six feet of rock and coal from the roof at a slip on the high side. The fall extended beyond the "chamber" for 8 feet along the road and brought down four bars set on props. The whole road was filled by some 30 to 40 tons of rock and coal. The pillar between the "chamber" and the roadway, which was only 6′ thick, was crushed out and the sirdar was killed on the spot.

When a road pillar has been reduced to small dimensions, as in this case, the rails should be lifted and the tub moved back to the next pillar out-bye. The deceased apparently thought he was safe at the tub.

No. 41. Gopalichak Coal Company, Limited's Gopalichak coal mine.

This accident took place in a "broken" district where a gang of seven men were employed in taking out a pillar. Owing to trap and jhamma the workable thickness of the coal varies considerably. At this point it is from 9′ to 16′ thick. On the north side of the pillar 16 feet of coal had been worked up to the sandstone roof. The upper part of this coal was then found to be inferior and an attempt was made to leave a thickness of $2\frac{1}{2}$ feet of roof coal unworked and supported by vertical timbers. No sprags or horizontal stays were used with the result that, on a "slippery back" being exposed at the foot, a mass of side and roof coal, 20′ long, came away, swaying out the vertical props. Two men were killed on the spot.

The practice of leaving roof coal with a long loose end on vertical timbers only is highly dangerous.

No. 47. Standard Coal Company, Limited's Benahir coal mine.

This accident took place in an area of workings, where coal pillars, 45 feet square and 20 feet high, had been formed in a seam 26 feet thick. About a dozen coal cutters were employed in taking up a thickness of 3 feet of floor coal. Practically the full width of the galleries was being cut and a very small error on the part of the miner would lead to the undermining of the pillars. The seam is traversed by pronounced joints, inclined at angles of from 0°-25° from the vertical. The workmen were Bilaspuri coolies, who have little or no regard for discipline. They appear to have had no regular working places, and each man worked in any of the galleries which happened to be vacant at the time when he came to work.

One of the workmen wrongfully undermined the corner of a pillar, and a mass of 10 tons of coal fell from a slippery joint on to a woman, who was carrying coal from an adjacent working place and happened to be passing at the time.

The man who caused the accident left the mine immediately afterwards. It is not improbable that he had observed the weakness of the corner of the

pillar due to the slippery joint, and deliberately undermined it with the idea of getting a large quantity of coal easily. It is fortunate for him that the coal did not fall towards him but in the direction of the strike of the seam and at right angles to him.

The workings were overlooked by an overman. This man had not visited the place that morning, but would have done so later on. An inspection had been made by a sirdar, but this man's duties appear to have been chiefly of a recruiting character. The night shift sirdar had visited the place towards the end of his shift and claimed that it was then in a safe condition. This may have been so, as it would not take very long for it to become unsafe.

Although the immediate cause of the fatality was the illegal act of the miner, yet for the following reasons the management cannot be considered blameless :—

(1) It was imprudent to entrust such dangerous work to Bilaspuri coolies. Their lawless character is well known.

(2) The supervision was insufficient.

(3) It is not a safe practice to permit of the floor coal being cut to the full width of the gallery.

(4) As far as possible each miner should have a definite working place, for the proper working of which he can be held responsible. This was not the practice. The miners worked practically where they pleased.

No. 50. Hariladih Coal Company, Limited's Kendwadih coal mine.

This accident happened in a pillar-cutting district. The method of extraction practised is to split the pillars (40′ square) into four by cross drivages. This leaves stumps about 15′ square which are removed one by one as rapidly as possible by miners working from all sides.

At the time of the accident 9 miners were working all round a stump, measuring 9′ × 10′. The two men working on the dip side undercut to a "joint" from which a mass of about 2 tons of coal fell on them. One was killed on the spot and the other was severely injured. Six props were knocked out by the falling coal.

There was no lack of timber set, but only spragging would have kept up the coal which fell. The practice of allowing miners to work on the dip side of a pillar is unsafe, and the manager agreed to prohibit it.

No. 54. Messrs. F. F. Chrestien & Company's Charki mica mine.

A man and three women were carrying mica to an unworked part of the mine, where it was to be sorted, and as they passed along, the hanging wall, which was composed of schist, collapsed for a length of 25 feet and a height of 14 feet. The fall averaged two feet in thickness. Three of the deceased were killed outright and the fourth died on the way to the hospital. The exact slope of the hanging wall at this point could not be determined after it had fallen. The manager stated it had been sloped back to an angle of about 60 degrees. Evidence went to show that it had stood as it was for four years, and that no cracks had been noticed prior to the accident. This can be quite believed, for it was evident that there had been a sudden collapse throughout the mine. In addition to the portion which fell, cracks were visible in several other places. The mine is an extensive one and consists of a large open working, which was being excavated where pits and tunnels had originally been sunk and driven. The extent of these pits and tunnels is unknown, but in any case such an excavation is necessarily weak and requires more care than one in solid strata. The officials however thought the mine safe, but the event shows that they were mistaken. Since the accident rules under section 20 of the Indian Mines Act have been made for manganese, mica and limestone mines, and one of the rules requires that the sides of open workings shall be sloped, stepped or

secured in such a manner as to prevent danger from falls of material. The proper observance of this rule will prevent accidents of this nature in open work excavations.

No. 59. Panjab & Bengal Coal Company, Limited's Burragarh coal mine.

In this case a man and a woman were killed by a fall of side coal. The accident occurred in an incline at an early hour on a Sunday morning. No night shift was worked at the mine and the officials state that they were unaware of any person being in the mine. There have been cases in previous years where accidents have occurred and upon inquiry it has been found that the officials were unaware of the deceased being in the mine. If the mouths of inclines were fenced at week ends and at nights, if no work is to go on, or fitted with gates, to be closed at these periods, risk of an accident occurring would be lessened, and, in all probability, considerable surreptitious robbing of coal would be prevented. The practice of fencing under these circumstances is in force now at more than one mine and has proved effective.

No. 60. Babu Rai Gosta Behari Lal Singh and others' Nodhia coal mine.

Four men had just gone down to work in the bottom of a pit, which was being converted into an incline, when a brick side wall and the ground behind it collapsed, killing three of them.

The fallen ground and bricks so filled up the excavation that it was not possible for the inspector who held the inquiry to ascertain the thickness of the wall or the exact cause of the accident. The manager stated that the wall was 2′ 6″ to 3′ 0″ thick. The quality of the mortar was found to be very poor, and the wall was built without any batter. The top five feet of the superjacent ground was composed of hard laterite, 5 feet thick. There had been a fall about a month previous to the accident, before the brick wall had been completed, and it was stated that the laterite had been left overhanging and the wall built in under it. It is possible that the first fall had left the ground in a weak state and that it again slipped, carrying the brick work with it. It is also possible that the wall was built on a soft or sloping foundation, and that the stability of the brickwork had been affected by the heavy rain that had fallen.

Vertical retaining walls are greatly strengthened if they are arched or provided with a substantial batter. Had the wall been built on a firm foundation and of reasonable thickness, and either of the above precautions taken, the accident would not have occurred.

No. 61. Maharaja M. C. Nandi's Ekra Khas coal mine.

A miner had taken advantage of the sirdar's absence from the mine for a meal at midday to go beyond a fence into an unused gallery and, whilst robbing a pillar, was killed by the fall of one ton of side coal, 4′ 6″ × 4′ 6″ × 1′ 2″. Since the accident the manager has arranged for all sirdars at the mine to be relieved at midday and for the work to be constantly supervised.

No. 65. Lutchipur Coal Company, Limited's Ranchgatchia coal mine.

A miner was engaged in the act of cutting down the corner of a pillar, when the coal unexpectedly fell from a cleavage plane. He stepped back quickly to avoid being struck and, in doing so, stumbled over a heap of coal, which he had previously stacked behind him.

He sustained slight injuries only, but died seven hours after the accident. In the opinion of the colliery doctor death was due to shock, supervening on a constitution already weakened by disease.

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To facilitate subsequent extraction of the coal, deceased had undercut the corner of the pillar to a depth of 15″, in accordance with the prevailing custom of the mine, when the sirdar came on the scene and, observing a marked cleavage plane running obliquely across the corner, ordered deceased to cease undercutting and dress back the coal to the plane. He stated that he chalked the holing in token of this order. Immediately he went away, however, deceased continued undercutting, with the result as stated above. Had the sirdar's order been obeyed the accident would not have happened.

The practice of building a large heap of coal immediately behind the miner is to be deprecated, for the heap cuts off his rapid retreat in case of coal falling from the face or roof. During the last few years this practice has contributed to several accidents. It is almost as easy to stack the coal 10 feet away as it is to stack it 5 feet away and the former distance should be insisted on.

No. 70. Sendra Coal Company, Limited's Sendra coal mine.

Deceased was robbing a pillar in a gallery which was used as a travelling road, when a mass of coal, 10′ long by 5′ high by 2′ thick, weighing about 3 tons, fell from the side on to him. At the time of the accident both the overman and the sirdar were out of the mine. The gallery moreover was not one which should have been used for travelling purposes. It was 20′ high and 20′ wide, and in consequence of the excessive width the pillar showed signs of crushing and its side was soft and dangerous.

No. 75. Bhulanbarari Coal Company, Limited's Bhulanbarari coal mine.

A miner went through a fence and was injured by the fall of a corner of a pillar which he was robbing. He had only worked at the mine for two weeks. The inspector who investigated the accident was of opinion that no experienced miner would have dared to work at this place, and requested the officials to see that inexperienced coolies are not permitted to work alone.

The accident occurred at 8 P.M. The colliery doctor, who is an L.M.S. (Calcutta), was called to the injured man, but refused to attend, as he had fever. He visited him next morning and found him dead, his spine having been fractured. The doctor was dismissed.

No. 76. Babu Ram Krishna Tewari's Parsatari mica mine.

The mine consisted of an open excavation, $16\frac{3}{4}'$ long × 8′ wide ×15′ deep, out of which three inclined drifts had been driven along the vein of mica for short distances and in different directions.

The material cut in the drifts was conveyed to the surface by sixteen men and women, standing close together inside the excavation and passing the baskets from hand to hand. Without any warning a pane of decomposed pegmatite, measuring 8′ square × 12″ thick, became detached from the west side and fell upon them. Several were knocked over and two were killed.

The unsound condition of the affected side was probably visible before the fall, or, at any rate, could have been readily detected by "sounding" days before the fall. No examination, however, appears to have been made by anyone and consequently no one knew of its condition. There was every reason for a careful examination, for a large fall of side adjacent to the fall in question had occurred only three days previously.

Failure to properly examine the side and report upon its condition was a violation of rule 3 made under section 20 of the Indian Mines Act for manganese, mica and limestone mines and failure to slope, step or secure the side in such a manner as to prevent danger from falls of material was a violation of rule 19. It was only because these rules had been in force for a very short time before the accident, that no prosecution was taken in this case, but owners and managers of mines regulated by these rules must from now realise their new responsibilities and take the necessary precautions.

IN SHAFTS.

No. 84. Saltore Coal Company, Limited's Saltore coal mine, No. 3 shaft.

The singular circumstances attending this accident are of special interest just now when deep sinkings, necessitating the use of large sinking pumps, are becoming common in the coalfields.

Two massive steel girders buckled, while supporting a heavy steam pump in a sinking shaft, 512′ deep, and demolished the brick work in which they were embedded, a portion of which fell down the shaft and struck two men, who were standing in the bucket at the time, attending to the pump. One was killed outright and the other died two days later.

Plan D illustrates the positions of the girders before and after the accident.

The girders were of standard section, 18″ × 7″. One was 19′ long and the other 23′ long, but they both had the same span, *viz.*, 16 feet, being embedded in the brick pillars supporting the pit bank, which had been partially cut away to receive them. These pillars were situated one on each side of the shaft opening and were 6′ 9″ wide. The girders from web to web were placed 4 feet apart, the short one being fixed 1′ 5½″ from the shaft side of the pillars and the long one 1′ 3½″ from the other side. Four 10″ × 5″ girders were bolted to the top flanges of the main girders to carry the pulleys.

The pump was of the usual sinking type, 21″ × 24″ steam, 10″ × 7¼″ ram, capable of raising 11,000 gallons per hour, and was freely suspended in the shaft by two 1⅛″ steel wire ropes, which passed over the pulleys to two hand winches, situated 22′ away. The dead weight on the pulleys amounted to 12 tons 1 cwt., the pump and suction pipe alone weighing 4 tons.

The apparatus had been in use for seventeen days when the accident occurred.

On the night of the accident the pump began to give trouble; it would not take hold of the water. On opening the suction valve the rubber was found to be defective. This was renewed but without effect. The retaining valve was next opened and also found to be defective. A new valve was put in and the pump was restarted. It continued to work satisfactorily until shortly before the accident when the deceased, who were in attendance at the pump, signalled for steam to be shut off. A few minutes later they signalled for steam to be put on and almost immediately had it shut off again. Shortly afterwards, when steam was again put on in answer to their signals, there was a loud report at the pit top and, on going to ascertain the cause, it was found that the girders had buckled badly to a maximum deflection of 25⅞″ in one girder and 14″ in the other, and that the brickwork intervening between the girders and the sides of the pillars had been ground out by the turning movement of the girders.

It is obvious from the foregoing that the girders had been subjected to a sudden and severe shock, for they had been in use under the same constant load for over a fortnight. It was known that nothing of a heavy nature had fallen down the shaft and struck the pump. An examination of the pump, which, however, could not be made until a month later, owing to the water having risen, disclosed the fact that the snifting cock had been removed because it was damaged and had been replaced by a solid plug, and also that the delivery valve cover joint had blown out. The manager thinks the cock was removed by one of the deceased just before the accident.

The use of the snifting cock is to regulate the feed of air to the air vessel. Its replacement by a solid plug would rob the delivery column of the cushion necessary to prevent shock being transmitted to the pump at each stroke, and surging strains of a severe character would be set up in the whole suspension system. This is what appears to have happened; the strain set up exceeded the limit of elasticity and resulted in deformity of the structure.

In all sinking pump suspension systems there are repeated variations of load on the supporting structure, and it is well known that such cause failure at a lower strain than when the load is steady and without variation.

The girders in this case were each capable of bearing a safe load applied vertically at the centre of the span of 20 tons, or 40 tons for both. It will be seen by reference to the section that the resulting strain was applied in a direction that tended to overturn the girders, which it finally succeeded in doing, and further that it was applied in a direction that very greatly minimised their resisting power. This resulting force was equivalent to a load of about 19 tons, calculated on the dead weight alone of the suspension system. The turning moment was therefore great and the bearing surface on the brickwork comparatively small.

It is often difficult to arrange the supporting girders at a sinking shaft in a manner different from the way in which these were arranged, but all the additions to strength given below can generally be readily applied :—

(1) Reduction of span.

(2) Stout struts fixed in the direction of resultant force.

(3) Insertion of distance pieces from web to web.

(4) Rivetting sole pieces of wrought iron of substantial size to the bottom flange of the girders near their ends to increase the bearing surface.

(5) Laying the girders so that the bottom flanges do not come in contact with the outer face of the brickwork.

Since the accident girders of the same section, each 23′ long, have been fixed and occupy much the same position as the old ones, but all the strengthening additions enumerated above have been made.

It may be mentioned that by a suitable arrangement of pulley blocks the strain on the winches in such cases may be considerably reduced.

No. 86. Central Kurkend Coal Company, Limited's Central Kurkend coal mine.

A pump and three ranges of pipes were supported in a sinking shaft, 239 feet deep, by a steel rope, one end of which was fastened in the head-gear, the other passing to a winch. A portion of the weight was carried on a baulk of timber at the surface, the remainder being on a steel rail 90 feet below the surface. The ends of the steel rail rested in hitches in the shaft walls and were built in with brickwork. The whole suspension system was tied together by six clamps, two at the surface, two just above the steel rail and one each, respectively, about 50 feet above and below the steel rail. These clamps had apparently been screwed up tight when the pipes were cold. When steam was turned on, expansion took place, and the brickwork securing the ends of the girder became loosened to such an extent that the vibration set up by the working of the pump dislodged a brick, which fell down the shaft, whilst the head fitter and another man were working on the pump platform. The latter was struck on the head and killed on the spot.

The accident appears to have been due to failure to appreciate the fact of the expansion of iron when subjected to heat.

SUFFOCATION BY GASES.

No. 91. Assam Railways and Trading Company, Limited's Tikak coal mine.

At this mine a seam, 75 feet thick and extremely liable to spontaneous combustion, is being worked in three successive stages on a system of "chambering." The workings are ventilated by a Schielé fan, 15 feet in diameter. At a point $1\frac{1}{2}$ miles in from the entrance to the workings a level road was being driven in the bottom coal to recover an area of coal which had been abandoned after an explosion just a year previously. Near the face of this road there is a small dip road or "chori", formerly connected with a "chamber" below, which had been exhausted two or three months before and dammed off. The rib between this level road and the "chamber" is 36 feet thick. The dam is said to have consisted of 14″ brickwork, 3′ sand and 9″ brickwork plastered.

On the day before the accident the European assistant foreman in charge noticed that the plaster on the face of the dam was cracked and gave orders for replastering. He stated that there was no sign of heat or gas. Early next morning a party, led by the head sirdar named Bahadur, and a mason, named Mahadev, went to the spot. Bahadur and Mahadev went down the "chori" to the dam 18 feet below and remained there for about three quarters of an hour. The plastering was nearly finished when their lamps were suddenly extinguished by blackdamp. Bahadur managed to get out on to the level, but went in again to assist Mahadev and both men lost their lives. The gas accumulated so rapidly that it was not until seven o'clock in the evening that it could be cleared by the air current and the bodies recovered. Subsequent to the accident more or less sudden inbursts of blackdamp occurred from time to time. Pronounced fissures were found traversing the coal near the dam, and in these blackdamp could always be detected.

Of the several theories put forward to account for these inbursts, the most probable is that the gas came through fissures from an old road in the bottom coal which was connected to old workings. From an old plan it was found that an old road, which was thought to be in the top coal workings, is actually in the bottom coal. This old road is probably very close to the face of the new road and it seems likely that the blackdamp came from it through fissures in the coal. The following points appear to call for remark:—(1) The plan was inaccurate. Had the existence of the old road been realized, precautions would probably have been taken to drain off the gas by boreholes. (2) Owing to leaky stoppings, the ventilation in the district was not sufficient to cope with a small inrush of blackdamp.

HAULAGE.

No. 100. Auckland Coal Company, Limited's Nudkhurki coal mine.

A train of 20 empty tubs was about to be lowered down a haulage slope. The deceased took out the sprag from the leading tub, shouted out an order to lower the train, and then proceeded down the incline to open the drop-gate 75 feet below. Unfortunately a coupling had been missed and the first three tubs ran wild and crushed deceased against the gate. He died next day. The accident might have been avoided if the drop-gate had been of a balanced type capable of operation from one side of the line. It is, however, much better to dispense with drop-gates as a precaution against runaways and to use an appliance such as a "cut rail" or "kick up" operated from the top of the slope by means of a lever with a rod or wire. The former is preferable, as it can be made to lead the runaway tubs into a catch siding and so save breakage.

No. 108. Khas Jharia Coal Company, Limited's Khas Jharia coal mine.

Owing to the breakage of a rope capping five loaded tubs ran wild on a dip haulage slope. Deceased was run over and killed on the spot.

The rope had been at work for two years and showed such signs of wear that the load had been reduced from 10 to 5 tubs two months before the accident. The capping which broke was one of a pair of cappings which had been put on midway in the rope and which had worked for some six weeks. In such a position cappings are subject to great wear and liable to be torn open by catching in crossings, rollers, etc. Except as a temporary expedient, pending the running in of a splice, their use cannot be considered prudent.

Inquiry disclosed the fact that although the manager had indented for a new rope on the 28th March it was not ordered by the agent until the 5th May and only received at the mine on the 6th June. This delay should not have occurred. Owners and agents should see that managers are supplied with new material within a reasonable period of indent. A new rope should be ready in stock before the end of the life of an old rope.

No. 111. Vizianagram Mining Company, Limited's Kodur manganese mine.

Owing to the failure of an incline attendant to pull over the safety stop, after the arrival of a train at the top of a haulage slope, a loaded tub ran wild and a woman was killed. The accident would have been avoided if a catch siding or automatic stop chock had been in use. Inquiry also disclosed the fact that there was no drag or hook bar and that the buffer stop was inadequate.

No. 113. Lakorka Coal Company, Limited's Lakorka coal mine.

Whilst a train of fifteen tubs was being started from the top of a haulage slope a coupling hook fell off and four tubs ran wild. Deceased who had just entered the arching on his way underground was knocked down and died two hours later.

The accident would have been avoided if a catch siding or automatic stop chock had been in use.

Inquiry disclosed the fact that the manholes were not within the proper distances, and a prosecution was instituted against the manager. This case is still pending and will be referred to in section IV of the next Annual Report.

No. 115. Lutchipur Coal Company, Limited's Panchgatchia coal mine.

Whilst a train of five tubs was being lowered on a haulage slope, the front tub became uncoupled and ran wild. Deceased was run over and received injuries from which he died five hours later. The line was far from straight and the grade was so uneven that the tubs were checked and bumped against one another. There was a great deal of loose coal lying on the road. The tubs were of two or three different types and in poor repair. Some had closed drawbars and others drawbars ending in hooks. These were at different heights above the rails. The couplings consisted of three links and a hook and were much too long. The accident was due to the numerous defects detailed above and was clearly preventable.

No. 119. New Manbhum Coal Company, Limited's Dhundabad coal mine.

A violent blast, produced by an extensive fall of roof, dislodged a rail 11′ 6″ long and weighing 52 lbs., which was supporting the shaft bottom protection sheets, and hurled it a distance of 32 feet. In its flight it struck a woman, who was filling a tub at the time, on the head and killed her outright.

The accident, which is illustrated by plan C, serves to bring into prominence the serious consequences to the life and value of a mine that almost inevitably follow the formation of small pillars in the first working or of pillars whose ultimate crushing strain is but slightly greater than the pressure exerted by the weight of the superincumbent strata.

In a district of the mine where the cover varies from 100 to 150 feet thick, and is composed of alternating shales and sandstones, the seam had been cut up into pillars some years ago. At the time of the accident these pillars ranged in size from 100 feet square to 30 feet square by 18 feet high. Goafing had recently been started and 19 pillars had been extracted in the usual manner, when weighting of the roof began to assert itself in a mild form. The work-people were withdrawn and precautions taken generally to protect the work-people in other parts of the mine from being exposed to the effects of a sudden and dangerous development of this condition.

After the lapse of a fortnight a change took place and imminent collapse seemed certain. All the work-people were removed from that side of the mine and told to work on the other side of No. 1 pit, 700 feet away. This order was obeyed. That night the roof over the goaf collapsed and so strained the adjoining roof that the pillars under it, numbering 103, were unable to with-

stand the added pressure and gave way, causing the roof to subside over an area of about 160,000 square feet and affecting the surface over a similar area, which resulted in damage being done to 57 huts.

Many persons in the mine were blown over and all the lamps were extinguished with the exception of one, by the aid of which the people found their way to the surface. Two men sitting under the protection sheets had a narrow escape.

Extensive pillar robbing had been practised in the past and so reduced some of the pillars that it was not safe to take them out. The fact that they had been so reduced in size assisted in the general collapse.

Large areas have been goafed in other parts of this mine. The subsequent falls have been confined to these areas and have not extended over the standing pillars. This no doubt led the manager to assume that the weight would be similarly restricted in this case also. The event however is one more proof that when pillars of small size are being goafed sudden subsidence over an area exceeding the area goafed should be anticipated, and in such cases, all persons should be ordered out of the mine when the goaf roof begins to show signs of collapse.

It is only fair to the present manager to state that neither the formation of the pillars nor the pillar robbing occurred in his time.

No. 127. Bansilal Ambirchand Mining Syndicate's Kochkurie manganese mine.

This accident occurred on a tramway which is six miles in length. The rails weigh 14 lbs. to the yard and are laid to a gauge of 2 feet. Traction is by hand and the grade, though undulating, is mainly in favour of the load.

Deceased was one of a party of persons who borrowed a trolly from a loading foreman and were travelling on it after dusk without lights. At the bottom of an undulation in the grade the trolly collided with a train of four loaded tubs, which was being propelled in the opposite direction by eight tubmen, also without lights. The other passengers jumped clear, but the deceased was caught between the tubs and the trolly and received injuries from which he died two hours later.

Rules under section 21 of the Indian Mines Act, 1901, for the regulation of traffic on tramways in and about manganese mines are under consideration.

NOT INCLUDED IN STATISTICS.

No. 8. New Beerbhum Coal Company, Limited's Borrea coal mine.

This case is important to owners and managers who have abandoned shafts on their properties. A person of unsound mind ran out of his hut, and was pursued by his relatives. He came to the top of an abandoned shaft, 35 feet deep, lying in a remote part of the company's property. The top of this shaft was unfenced and he either fell or jumped down it. He was killed instantly. As the tops of all shafts are required by rule to be fenced, a prosecution was instituted against the manager, as referred to in section IV of this report.

No. 14. Babu Umed Bhai Patel's Egarcoor coal mine.

This accident occurred in the Mugma section of the Raniganj coalfield, through the management neglecting to warn the occupants of a hut which had been undermined. Two pillars of coal had been extracted under a cover of 7 feet of coal and 15 feet of decomposed sandstone and soil, on which a hut, containing seven persons, was standing. Early in the morning, before all the occupants were awake, the cover subsided to a depth of 7 feet over an area of 1,600 square feet and the hut was precipitated into the depression and completely demolished. A child aged one year was killed outright, its mother sustained a simple

fracture of her arm and another child a simple fracture of the thigh. The rest escaped unhurt.

This is the first time goafing has been done in the Mugma district and its full effects were not realized.

Whenever goafing is done at a shallow depth collapse of the surface is inevitable. Notice of impending danger should always be given to the occupants of houses likely to be affected by subsidences, and where possible evacuation insisted on.

Section IV.—Prosecutions and additions to the Act.

(a) PROSECUTIONS.

The following prosecutions which have been completed were instituted during the year or were instituted after inspections made during the year :—

In the last Annual Report an account was given of a fatal accident by fall of roof at the Royal Bengal Coal Company's Kusumkanali coal mine, by which three persons were killed. It was stated that proceedings had been instituted against the owner and the agent for not supporting this roof and also for not fencing unused galleries. These omissions constituted breaches of rules 3 and 7 made under section 20 of the Indian Mines Act. The cases were eventually taken against the owner as agent and against the manager under sections 221 (*e*) and 3 (*e*) read with the above rules. In view of the fact that the accident had entailed serious loss upon the owner, the cases were not pressed. The agent was fined Rs. 20 or two months' simple imprisonment and the manager was fined Rs. 50 or two months' simple imprisonment.

The owner and manager of Babu Bireswar Roy's Ramkanali coal mine were prosecuted under section 22 (*e*) read with rule 7 made under section 20 of the Indian Mines Act for neglecting to fence unused galleries. The owner pleaded that he was unaware of the fact that these galleries were unfenced. He had however been previously warned. He was fined Rs. 30 or two months' simple imprisonment. The manager was fined Rs. 60 or three months' simple imprisonment.

The manager of the New Beerbhum Coal Company, Limited's Borrea coal mine was prosecuted under section 22 (*1*) (*e*) read with rule 19 made under section 20 of the Indian Mines Act. This case arose out of the fatal accident described on page 24 of this report. It was pointed out by the Court that it could not be proved that death was directly due to the breach of the rule. The complaint was therefore amended and taken under section 22 (*3*) (*e*). The judgment was as follows:—"In this case the facts are admitted. The accused was manager of the Borrea colliery and on the 19th March a man, said to be insane, was killed by falling or jumping down a shaft on the colliery which was unfenced. The manager is therefore liable under sections 14 and 22 (*3*) (*e*) for a breach of the rule requiring all shafts to be fenced, unless he exonerates himself under section 14. He has not attempted to do so, and in fact says that he did nothing in the matter before the accident because he was only aware of the existence of the shaft (which is disused, and unconnected with any other workings) by his plan and that he had never visited the shaft during his tenure of the post.

"The only question is then what degree of negligence is shown, and consequently what penalty should be imposed. The prosecution admit and even emphasise the fact that the manager, as far as his general work is known to them, is one of the most careful and competent men : the accused's statement (nothing in which is contradicted) shows that the shaft is one which has been disused for many years, is not connected with the mine proper, is in a lonely place, not near any habitation or road, and to the extreme north-west of

the collery, 300 or 400 yards from the nearest surface working. He further says that he had a special man some time ago to fence all unprotected places, and that this shaft must, for reasons above given, I suppose, have been omitted by an oversight.

"The case shows that managers, however careful they may be in other respects, do not yet realise to the full their responsibility towards the general public, as opposed to their own employés : their attention is (no doubt) actually directed merely to the safety of their working and shafts in use : it may be admitted that only an insane person or an intending suicide would be likely to fall down a shaft of the kind described above, but the necessity for ensuring its safety so far as is possible remains. For this reason I do not think it is desirable to impose a merely nominal fine : but taking the professional character of the accused into consideration and the undoubted fact that the shaft in question was one which was likely to be overlooked, unless more systematic inspection of all parts of collieries were made than is at present the case, I fine him Rs. 30 under the section above mentioned."

The owner of Munshi S. Woomerali's Egarcoor coal mine was prosecuted under section 22 (*3*) (*e*) read with rules 4 (*b*), 9, 22 and 23 made under section 20 of the Indian Mines Act for failing to keep a daily report, plan of workings, ambulance appliances and all rules made under the Act, and also under section 13 (*1*) of the Act for working the mine without a qualified manager. He had been repeatedly warned. He pleaded guilty, and was fined Rs. 100 or one month's simple imprisonment.

The agent and manager of the Panjab and Bengal Coal Company, Limited's Burragarh coal mine were prosecuted under section 22 (*3*) (*e*) read with rules 7, 8 and 9 made under section 20 of the Indian Mines Act, for failing to fence unused galleries, for not providing signals and manholes on haulage planes and for not keeping an accurate plan of the workings. Both pleaded guilty. Each was fined Rs. 20 or one fortnight's simple imprisonment.

The managing owner and manager of the Bansdeopur Coal Company's Bansdeopur coal mine were prosecuted under section 23 (*3*) (*e*) read with rules 8, 19 and 20 made under section 20 of the Indian Mines Act, for failing to provide signals on haulage planes, for not fencing the top of an incline and for not fencing a winding engine and a hauling engine. The manager pleaded guilty, and was fined Rs. 50 or one month's simple imprisonment. The case against the owner was withdrawn.

A colliery mate working at Mohpani coal mine was prosecuted by the manager under section (22) (*3*) (*e*) read with rule 17 (*b*) made under section 20 of the Indian Mines Act for unlocking a safety lamp at a place other than the appointed lamp station, and was fined Rs. 10.

At the same coal mine a miner robbed a pillar. He was prosecuted under section 336 of the Indian Penal Code, and was fined Rs. 15.

Four permits granted to managers of small mines were cancelled during the year on account of mismanagement disclosed by inspections.

(b) ADDITIONS TO THE ACT.

Rules made under section 20 of the Indian Mines Act applicable to mines for manganese, mica and limestone were gazetted by the Government of India in the Department of Commerce and Industry in Notification No. 6436-152, dated the 2nd September 1911. These appear in Appendix IV, Statement 6. These rules are now bound up with rules applicable to all mines in one book. A similar book has been prepared for rules applicable to coal mines. Each may

be obtained from the Superintendent of Government Printing, India, 8 Hastings Street, Calcutta, at a price of two annas a copy.

Section V.—General Remarks.

HEALTH AND SANITATION.

A committee, known as the Jharia Sanitation Committee, controls operations connected with sanitation in the Jharia coalfield. The Deputy Commissioner of Manbhum is the Chairman, and the committee is composed of certain *ex-officio* members, representative colliery superintendents and colliery medical officers. Two sanitary inspectors are constantly employed. The chief work which devolved on the committee in 1911 was the combating of plague, the first case of which occurred on the 23rd September in the Jharia bazar. A special European medical officer was engaged, who took charge of all preventive measures within a radius of two miles from the bazar. A professional rat catcher was employed and rat catching was instituted on an extensive scale, and one of the sanitary inspectors was deputed to devote his whole time to the Jharia bazar. There has been no case reported from Jharia since the 26th December 1911, but the disease spread to the villages of Dhanbaid, Gobindpur and Chirkunda, the latter of which is in the Raniganj coalfield, but all of which are in the Dhanbaid Sub-Division. These villages are outside the scope of the work of the committee. Altogether there were 78 deaths, 12 of which occurred in Jharia, 3 in other parts of the coalfield, 20 at Dhanbaid, 18 at Gobindpur and 25 at Chirkunda and neighbourhood. The last case of all reported was on the 29th March 1912 at Chirkunda.

Eight meetings of the committee were held during the year. The expenditure incurred is borne by the Local Government, the Indian Mining Association and the Rajah of Jharia in equal shares. The committee will cease to exist when the Bengal Mining Settlements Act (Act II of 1912) is put into force.

An epidemic of pneumonia broke out at Sukli manganese mine in the Central Provinces and, owing to the frequency of attacks, the disease was suspected to be pneumonic plague. Microscopic examination tended to confirm this. By means of segregation and the burning of huts in which the disease made its appearance, it was soon stamped out.

An outbreak of cholera occurred in September at Jamadoba coal mine in the Jharia coalfield. A workman was attacked and was taken home, his death taking place the same day.

On inquiry it was found that this man had been drinking soda water purchased in the Bhaga bazar. The remaining contents of the bottle from which he had been drinking was analyzed by the Company's medical officer, Dr. Simpson.

The result of the analysis in Dr. Simpson's own words is as under :—

"The resultant analysis reveals a most terrible condition of affairs, and of all the unfiltered effluents of mines, tanks and rivers that I have examined, none have given such a result as this."

The hookman evidently contaminated the mine water from which the Jamadoba filters received part of their water supply, as during the first week following the outbreak, wherever there was a filtered water hydrant, cholera broke out. When this was discovered, the filtered water was cut off, and the colliery people for about two weeks were supplied with water from wells. The filters were then thoroughly sterilized and treated with permanganate of potash, and for the two weeks during which the people were supplied with well water, the filtered water was allowed to run to waste so as to thoroughly disinfect the filters and pipes.

Altogether there were 46 seizures and 29 deaths, the last case being on the 15th October.

Since the outbreak only river water has been used in the filters. The water is pumped from the Damuda River, a distance of 2 miles from the filter plant, by electrically driven three throw pumps.

The plans drawn up by the Sanitary Engineer, Bengal, for a water supply to the Jharia coalfield have been completed and are under consideration.

There was an outbreak of cholera in the Kodarma mica field in April. From inquiries it was found that 141 deaths occurred at the mines. Most of the labour, however, returned to their villages and the general opinion among the leading mine officials is that the total death roll was not far short of one thousand.

There was an outbreak of cholera at the Rajhara coal mine in the Palamau district, in Bengal, resulting in 10 deaths and at Kalichedu mica mine in the Nellore district in Madras, which is reported as slight.

Malarial fever has been in evidence among the miners at the Cape Copper Company, Limited's mines in Singhbhum; the Hingir-Rampur Coal Company, Limited's coal mine in Sambalpur; the Central Indian Mining Company, Limited's Junawani manganese mine in Nagpur; the North-Western Railway Company's Khost coal mine in Baluchistan and the North Anantapur Gold Mines, Limited's mines in Madras.

With the above exceptions the reports received on the health of miners are very satisfactory.

The total rainfall at Jealgora in the Jharia coalfield was 41·82 inches. At Sitarampur in the Raniganj coalfield it was 54·48 inches, being 3·39 inches in excess of the previous year. Rain fell here on 87 days, and was not so well distributed as in the previous year. On six days it exceeded two inches. At Giridih the rainfall was 50·51 inches, rain falling on 72 days.

AMBULANCE WORK.

As foreshadowed in the last Annual Report, the scheme for placing ambulance work throughout the Bengal coalfields on a permanent basis has become an accomplished fact. An influential Central Committee has been formed to direct and control the local centres. It is constituted as follows:—The Chief Inspector of Mines in India (President), Messrs. R. J. Browne and S. Heslop (Vice Presidents), the Collector of Burdwan, the Deputy Commissioners of Hazaribagh and Manbhum, the Sub-Divisional Officers of Asansol and Dhanbaid, the Inspectors of Mines in India, Messrs. T. Adamson, A. A. Agabeg, F. J. Agabeg, R. G. M. Bathgate, E. S. Bennertz, H. M. Bull, G. Crawford, Glen George, W. Hutton-Williams, J. S. Kean, P. S. Keelan, G. C. Lathbury, J. Mackintosh, W. McFarlane, G. Miller, R. Mitchell, C. Nairne, F. Owen, E. M. Patterson, W. J. Rees, A. S. Thomson and J. J. Turnbull.

Well attended meetings have been held to lay down the broad lines of organisation that should give effect to the determination of the industry to provide for the instruction in "First Aid" of the officials employed at the mines. It was agreed that the first necessity was the possession of funds, chiefly in order that the services of lecturers and examiners could be recognised and accordingly an appeal was made to all colliery owners for subscriptions. This met with a very generous response, the sum of Rs. 1,840 being received. I have pleasure in appending a list of the subscribers to the fund:—the Maharaja of Cossimbazar, the Raja of Jharia, East Indian Coal Company, Limited, Messrs. F. W. Heilgers & Co., H. V. Low & Co., Apcar & Co., Macneill & Co., Turner, Morrison & Co., Martin & Co., Mackinnon, Mackenzie & Co., Balmer Lawrie & Co., Shaw, Wallace &

Co., Andrew Yule & Co., Kilburn & Co., Bird & Co., Burn & Co., Sutikdih Coal Company, Limited, Bulliari Coal Company, Sitarampur Coal Company, Limited, Williamson, Magor & Co., Octavius Steel & Co., McLeod & Co., Baraboni Coal Concern's Chinchuria Colliery, Tata Iron and Steel Company, Limited, Agabeg Brothers, Babu J. R. Agarwalla's Fatehpur Colliery, Anderson, Wright & Co., Pandeybera Colliery Company, Bansdeopur Coal Company, Mr. Khora Ramji's Bulliari Coal Mines, Babu Bhola Nath Chatterji's Haripur Colliery and the Searsol Rajbati.

I trust this list will be augmented in future by the inclusion of the names of more private owners, as a considerable increase in the funds will be required if a knowledge of ambulance work is to be placed within the reach of all subordinate officials.

Through the kindness of the Commandant of the Chota Nagpur Light Horse, a grant-in-aid of Rs. 7 per head was sanctioned for all efficient members of the corps in the current year who obtain certificates of proficiency at the classes.

Mr. S. Heslop, past President of the Mining and Geological Institute of India and Superintendent of the New Beerbhum Coal Company, Limited, has very kindly offered a challenge shield to be competed for by teams from the various centres. This will have a good effect in arousing keenness and raising the standard of efficiency.

Ten classes have been started, *viz.*, two at Dishargarh, three at Charanpur, two at Jharia, one at Sijua, one at Raniganj and one at Mugma. Instruction is still in progress at Raniganj and Mugma where the classes are attended by 60 members. The other classes had a roll of 392 members of whom 122 sat for examination and 110 succeeded in gaining certificates of proficiency.

The examination of the class at Giridih since the issue of the last Annual Report resulted in the success of 22 candidates out of 25 examined.

A new and popular feature was introduced last session in giving instruction in the vernacular. Six lectures were delivered in Bengali and four in English.

Dr. W. P. O'Connor, Dr. F. T. Simpson, Dr. W. D. Williams, Babu B. G. Chatterji, Babu S. P. Gupta, Babu P. C. Biswas and Munshi S. Nurulatta kindly undertook the duties of lecturers, often at great personal inconvenience. Their efforts were much appreciated. Dr. E. Nicholl of the East Indian Railway Company's Medical Department conducted all the examinations and the successful candidates are to be congratulated on passing the severe tests he applied.

A good deal of the success attained is due to the special interest taken in the classes by Messrs. F. Owen, E. S. Bennertz and P. S. Keelan.

Preparatory classes under the control of the colliery managers, directed by sub-committees, are about to be started at the large collieries for the purpose of training sirdars and important workmen in the practical operations of stopping bleeding, fixing splints, tying bandages, carrying the injured and restoring the apparently drowned. The students will be admitted to the classes at the re-organised centres as soon as they have proved themselves efficient in this training.

SIBPUR COLLEGE MINING DEPARTMENT.

Mr. E. H. Roberton, the Professor of Mining Education at Sibpur College, has reported that the session of 1911-12 commenced with a total roll of sixteen students, of whom nine were studying Course I, three being special students (scholarship holders), and seven studying Course II, four being special students (scholarship holders). In Course I six students qualified to sit for the annual examination leading to Course II, and three only were successful, one being a special student. The other two special students, having passed in the mining subjects, were allowed to study in Course II, but, through failure in subsidiary subjects, could not qualify for the diploma.

At the diploma examination five were successful, one being a special student.

Various successes have been gained by old students during the past year, amongst which are the following:—General Managership of the Jharia Collieries, Limited, Managerships of the Burragarh Coal Company, Limited, the Angarpatra Coal Company, Limited, and the Gobindpur Coal Company, Limited; one student has been appointed prospector to a Native State, while others have been made or are acting managers of small collieries, or have obtained posts as surveyors. In the colliery managers' certificate examination held this year one obtained a first class and two second class certificates.

Besides the usual routine work done by the students during the session several analyses of different coals and essays of copper-bearing and other ores, and in one instance limestone, sent from different parts of India or Burma, were done and proved of utility to the various persons who sent them. The Department can undertake still more of this class of work, though of course, being students' work, no guarantee, time or otherwise, goes with it.

The lack of elementary education in the special students, who are holders of scholarships and who are recruited from the young employés in the mines, was brought last year to the notice of the Local Government in a report by the Professor of Mining. In a very few instances have the special students, though usually good at the mining subjects, been able to make up sufficient leeway in other subjects, such as mathematics, to qualify for the diploma. The Local Government and the Indian Mining Association, in whose joint gift the scholarships were, decided therefore to abandon them.

There were a considerably larger number of applications this year than formerly for these scholarships, and it is a significant fact that, on being informed that no scholarships were available, five of the applicants announced their intention of joining the college as special mining students without scholarships. Four, up to date, have done so, and have commenced attending the lectures. These young men have relinquished their means of livelihood for the next two years, and are paying their own way, in order to increase their efficiency in their walk of life. This is surely an indication that in the youth of the coalfields is awaking a strong and real desire for a sound education, and that if only the college were more accessible, considerably more, with probably a high average of keenness and intelligence, would come forward to take advantage of it.

A suggestion has been made that, in lieu of the special scholarships that have been abandoned, scholarships should be instituted in favour of students who have gained their diplomas, to enable them to go to England and spend two years as articled pupils in a mine. Such scholarships would only be awarded in the case of students, who have shown exceptional merit, and who are of a calibre that would profit by such a privilege. That such a scheme would be acceptable is borne out by the fact that two old Sibpur mining students have gone to England to enhance their qualifications, one having been sent by the company employing him, and one having gone at his own expense and obtained employment in a mine in Scotland as a working miner, while a third (the special student who gained his diploma this year), is on the point of sailing at his own expense to become articled to the manager of a colliery.

The above suggestion, which is not new, but was first mooted by Mr. W. H. Pickering, formerly Chief Inspector of Mines in India, should find favour in that scholarships, or "studentships," would be for practical experience only, and would be awarded only in cases of exceptional merit and promise.

The proposed removal of the mining department of Sibpur College, and its incorporation into a mining and technical institute at Asansol, or some other mining centre, is occupying attention at the present time, and appears to have obtained general commendation. The increased facilities of teaching a technical subject in the midst of a country full of examples of that subject are apparent to all; the fear of limitation of numbers due to want of accommodation would no longer exist; workers in the coalfields would have at hand a means of giving their sons a sound technical education, while the backbone of the institute would probably be the "special student" class,—men who do not fear to give up wholly or in part their employment, in order to qualify themselves for posts of higher responsibility.

MINING EDUCATION IN THE BENGAL COALFIELDS.

As stated in the last Annual Report, the lectures in the coalfields are now delivered by colliery managers who have been appointed by the Local Government for the purpose, on the recommendation of the Mining Educational Advisory Board.

The Board was formerly known as the Mining Advisory Board of the Civil Engineering College, Sibpur, but in 1911 its title was altered to that stated above, and it was reconstructed, its members now being as follows :—

(1) The Chief Inspector of Mines in India, *ex-officio* Chairman ;
(2) The Principal, Civil Engineering College, Sibpur ;
(3) The Inspectors of Mines in India ;
(4) The Professor of Mining Engineering, Civil Engineering College, Sibpur ;
(5) Two representatives of the Indian Mining Association ;
(6) The President of the Mining and Geological Institute of India, and
(7) The Superintendent of Industries (*ex-officio* Secretary).

Certain powers were also conferred on it for the conduct of lectures and consequent examinations.

Two meetings of the Board were held during the year.

The lecturers appointed were as follows :—Jharia and Sijua Centres—Mr. S. McMurtrie, Charanpur Centre—Mr. H. C. Read and Dishargarh Centre—Mr. L. A. Jacobs.

The lecturers have reported that the total number of names on the registers for the session 1910-1911 was 237. The average number of students who attended the courses was a little greater than 20 per lecture, and 74 students (16 Europeans and 58 Indians) made 50 per cent. or more of the possible number of attendances, and thus became eligible candidates for the sessional examinations. These were held simultaneously at the four centres on the 2nd June 1911, the examiners being Professor E. H. Roberton and Mr. G. C. Leach. Of the 74 eligible candidates, 36 presented themselves and 18 (7 Europeans and 11 Indians) were successful in obtaining the necessary number of marks to qualify for certificates. With the exception of the total number of names, these figures are almost identical with those of the previous year, which was the last year in which the lectures were delivered by an official mining instructor, and in which there were 325 names altogether on the registers.

The examiners reported as follows :—

"We are unable to state what the standard of past examinations has been and cannot therefore make any comparisons. Generally speaking, we consider that the examination has not revealed a very high standard of mining knowledge. The answers were wanting in detail, expression was faulty and the sketches were poor and few.

"Arithmetical questions were in a great measure ignored, though they were not difficult which points to deficient elementary education.

"These defects, we consider, would be remedied to a great extent by closer application to homework. However painstaking the lecturers may be, it is hardly to be expected that one hour's tuition a week will qualify a student for examination unless it is supplemented by private study, and this should be insisted on.

"Notwithstanding the foregoing remarks we think there is no doubt that the classes are performing a very useful work in the coalfields."

TRUE MERIDIAN LINES IN BENGAL COALFIELDS.

In the last Annual Report attention was drawn to true north lines, which had been laid down at six places in the Bengal coalfields. These have already proved of great service and, in order that those who do not live in their immediate neighbourhood may readily find them, their exact location is marked on plans E and F attached to this Report. I would again urge upon those

responsible for the accuracy of mine plans the necessity of having instruments checked periodically. They should be so checked at least once a year.

MINING AND GEOLOGICAL INSTITUTE OF INDIA.

The total membership of the Institute at the end of the year, including subscribers, was 290. Five meetings were held during the year, there being a large attendance at each. The Government prize for the best paper read during the year was divided between Messrs. C. H. McCale and S. McMurtrie. Branches, for the purpose of holding branch meetings for the reading and discussing of papers, have been formed for the Jharia and Raniganj coalfields, respectively.

BOARD OF EXAMINERS.

During the year a change occurred among the non-official members through the resignation of Mr. J. J. Turnbull, who was succeeded by Mr. R. J. Browne. The Board therefore consisted at the end of the year of:—The Chief Inspector of Mines in India (*ex-officio* President) and Messrs. S. Heslop and R. J. Browne. I take this opportunity of placing on record the valuable and appreciated service rendered to the Board by Mr. Turnbull, who was connected with it ever since its formation.

Five meetings were held by the Board during the year.

There were eight applicants for first class Indian certificates of competency in lieu of English certificates, all of whom were furnished with Indian certificates.

An examination for certificates of competency as colliery managers was held at Dhanbaid in the office of the Department of Mines on the 23rd and 24th February 1911, at which 31 candidates competed for first class certificates and 51 for second class certificates. Out of the above numbers, only 3 were successful in obtaining first class certificates and 6 in obtaining second class certificates.

The non-official examiners at the above examination were Messrs. G. F. Scott and R. J. Browne, Mr. R. R. Simpson being the official examiner.

MINING BOARD.

No meetings of the Mining Board were held during the year.

OFFICIAL DUTIES IN 1911.

Mr. G. F. Adams was Chief Inspector of Mines in India.

Mr. R. R. Simpson was Inspector of Mines for No. 1 Circle.

Mr. G. C. Leach was Inspector of Mines for No. 2 Circle. From the 1st January till the 7th March 1911 he had charge of No. 3 Circle in addition to his own duties. He had 14 days' privilege leave, from the 13th till the 26th September.

On the 8th March Mr. C. J. E. David was appointed Inspector of Mines for No. 3 Circle.

During the year the Circles of the Inspectors of Mines were rearranged, as shown in Appendix IV, Statement No. 1.

Fifteen inspections were made, for various reasons, at mines which are not regulated by the Indian Mines Act. These are excluded from Appendix I, Table 1.

I have the honour to be,

SIR,

Your most obedient servant,

G. F. ADAMS,

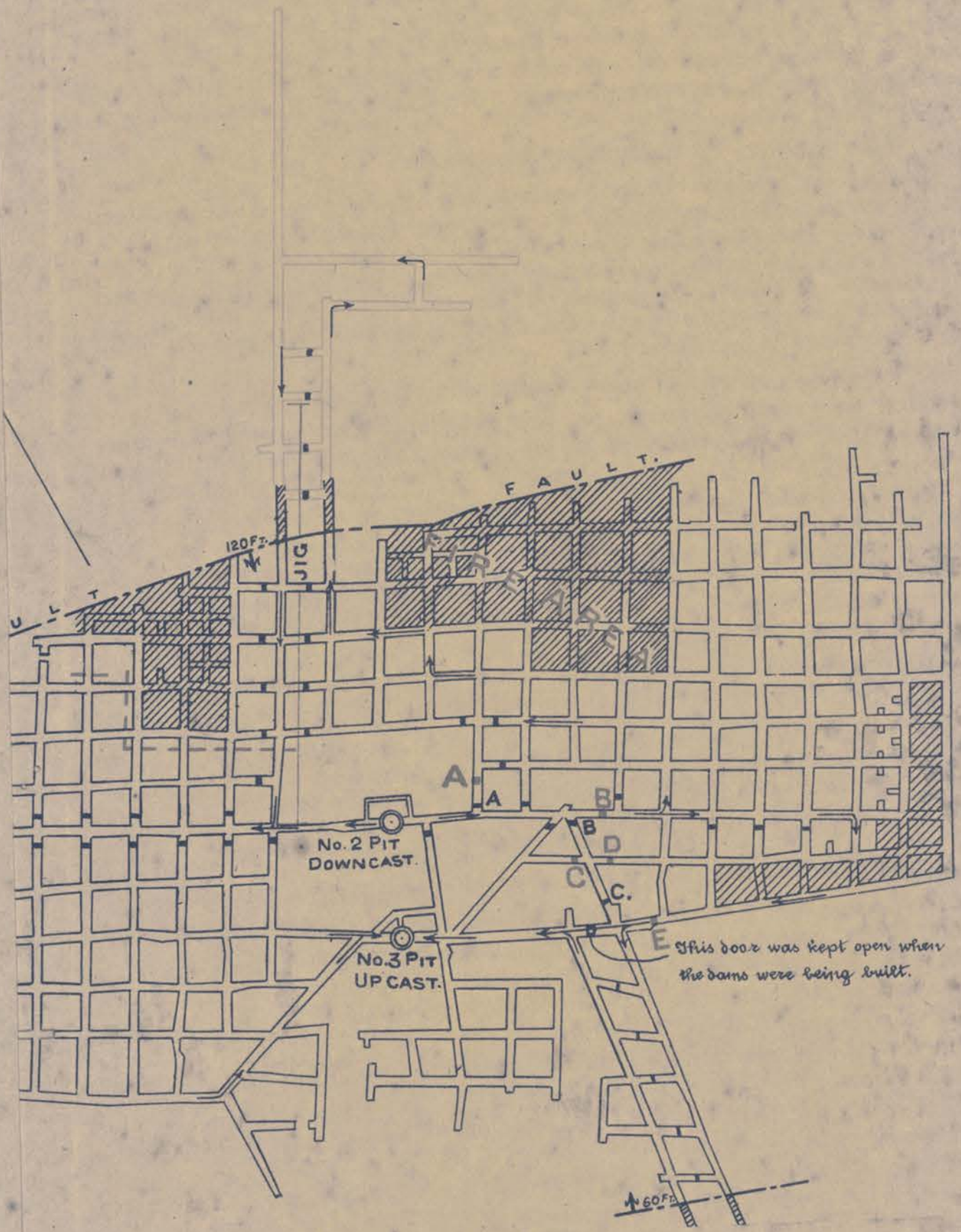
Chief Inspector of Mines in India.

USTRATING

NDWADIH COAL MINE

Nos. 11, 13 & 14 SEAMS

CH=200 FEET.

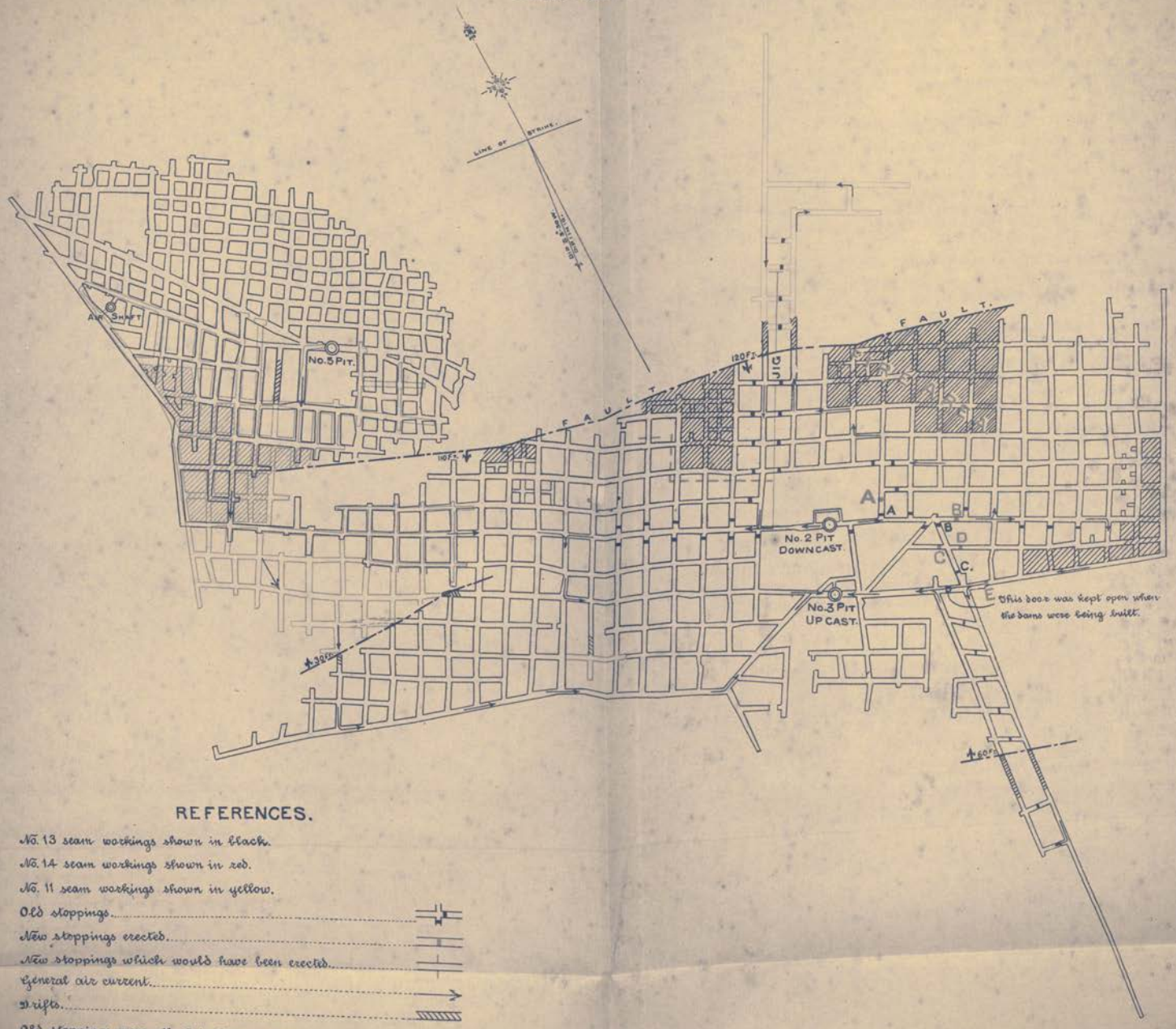


PLAN ILLUSTRATING

EXPLOSION AT KENDWADIH COAL MINE

SHOWING WORKINGS IN Nos. 11, 13 & 14 SEAMS

SCALE 1 INCH=200 FEET.



REFERENCES.

No. 13 seam workings shown in black.

No. 14 seam workings shown in red.

No. 11 seam workings shown in yellow.

Old stoppings.....

New stoppings erected.....

New stoppings which would have been erected.....

General air current.....

Drifts.....

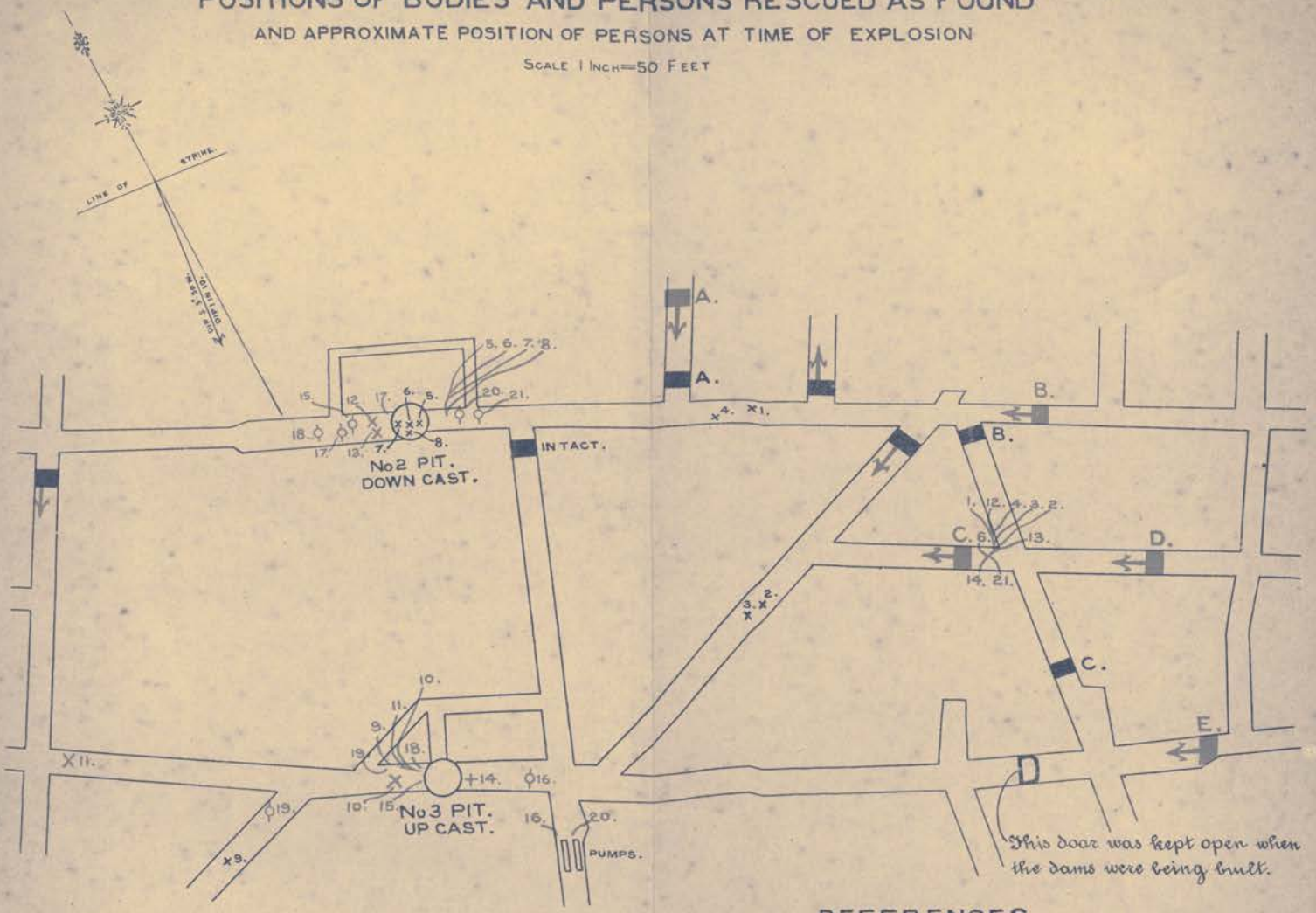
Old stoppings were all 15 inches thick.

Area Goafed.....

Reg. No. 1917 E., 12.—V.—1,500.

PLAN ILLUSTRATING
EXPLOSION AT KENDWADIH COAL MINE
SHOWING STOPPINGS NEAR Nos 2 AND 3 PITS, DIRECTIONS OF FORCE, POSITIONS OF BODIES AND PERSONS RESCUED AS FOUND
AND APPROXIMATE POSITION OF PERSONS AT TIME OF EXPLOSION

SCALE 1 INCH=50 FEET



REFERENCES.

New fire stoppings shown in red.
Old ventilation stoppings shown in black.

A 12'X8'X2' Brick in mud.
B 10'X8'X4' Brick in mortar.
C 13'X9'X2' Brick in mud.
D 13'X11'X4' Brick in mud.
E Kerosene tins filled with sand.

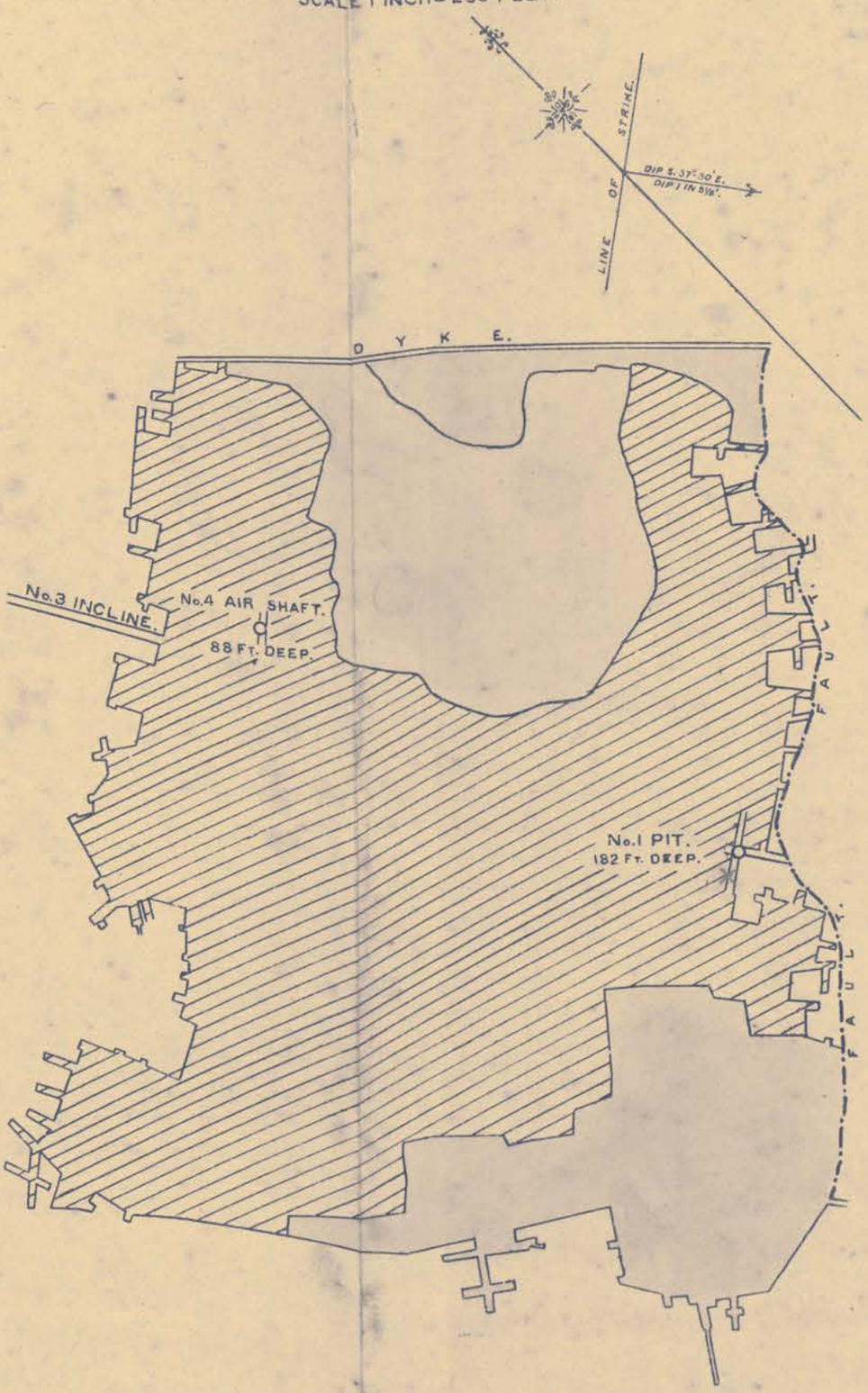
A 5 ft high in gallery 10 ft high. Taken out on the 7½.
B Taken out on the 8½.
C Taken out on the night of the 8½.

Old stoppings were all 15 inches thick.
Directions in which stoppings were blown. →
Position of bodies. X1 to X9
Position of persons rescued who died subsequently. +10 to +14.
Position of persons rescued who recovered. ◊15 to ◊21.
Approximate position of persons when explosion occurred as far as the evidence is available. 1.2.3. &c.

Reg. No. 1857 S., 14.—V.—1,500.

PLAN ILLUSTRATING
FATAL ACCIDENT BY AIR-BLAST
AT
THE NEW MANBHUM COAL Co, LTD'S DHOONDABAD MINE.

SCALE 1 INCH = 200 FEET.



REFERENCES.

Areas previously Goafed shown.....

Area which collapsed and caused the accident shown.....

Area still standing shown.....

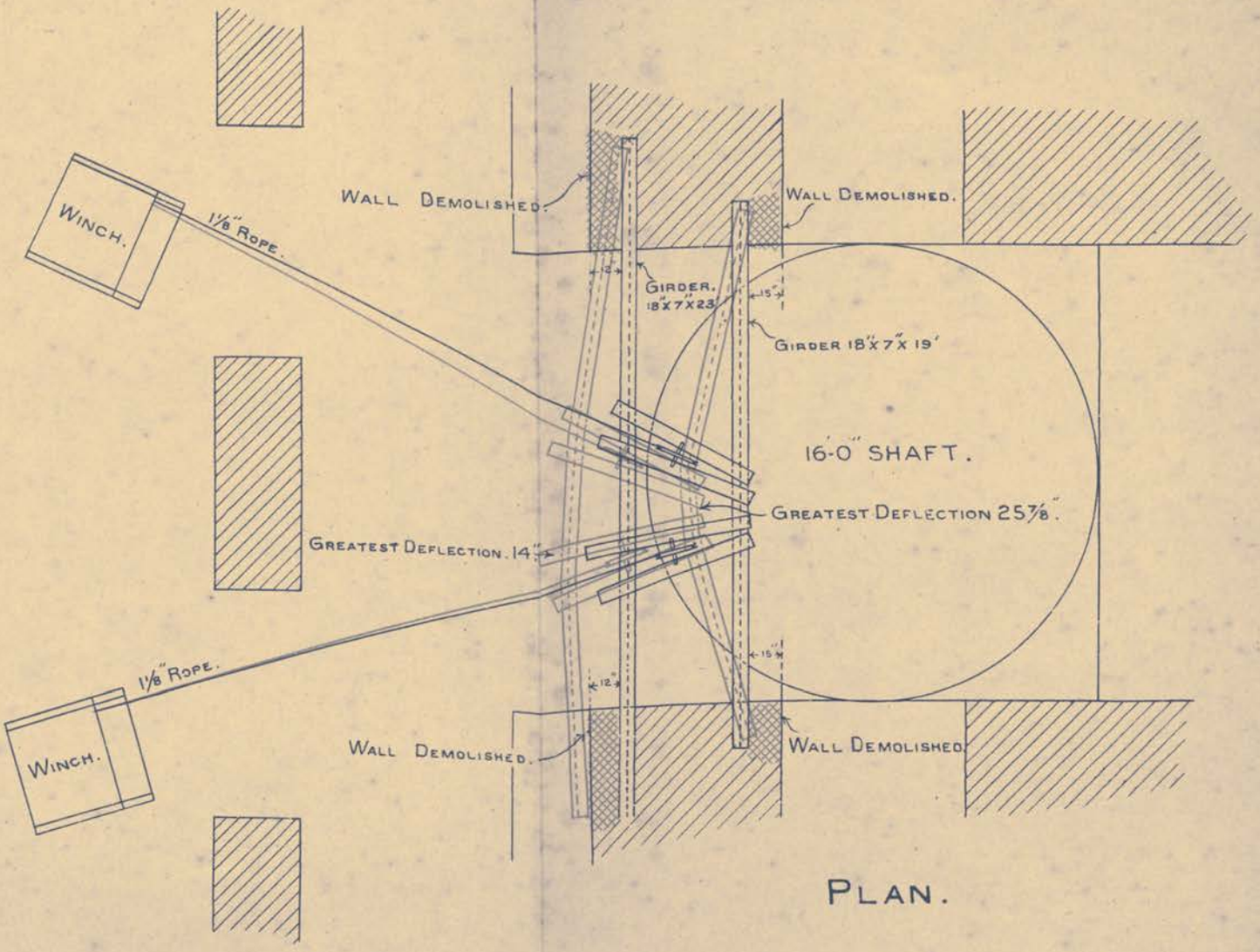
Where deceased was killed shown.....×

Reg. No. 1357 E., 12.—V.—1,500.

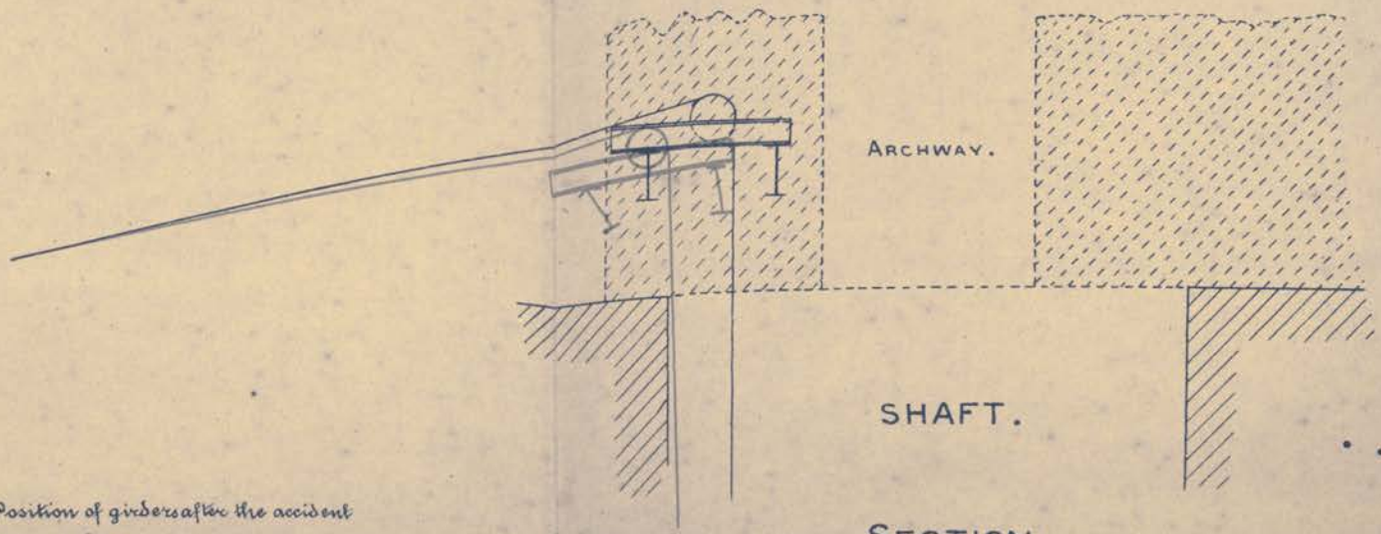
SALTORE COAL Co. Ld.

No3 SHAFT.

SCALE 1 INCH = 5 FEET.



PLAN.



SECTION.

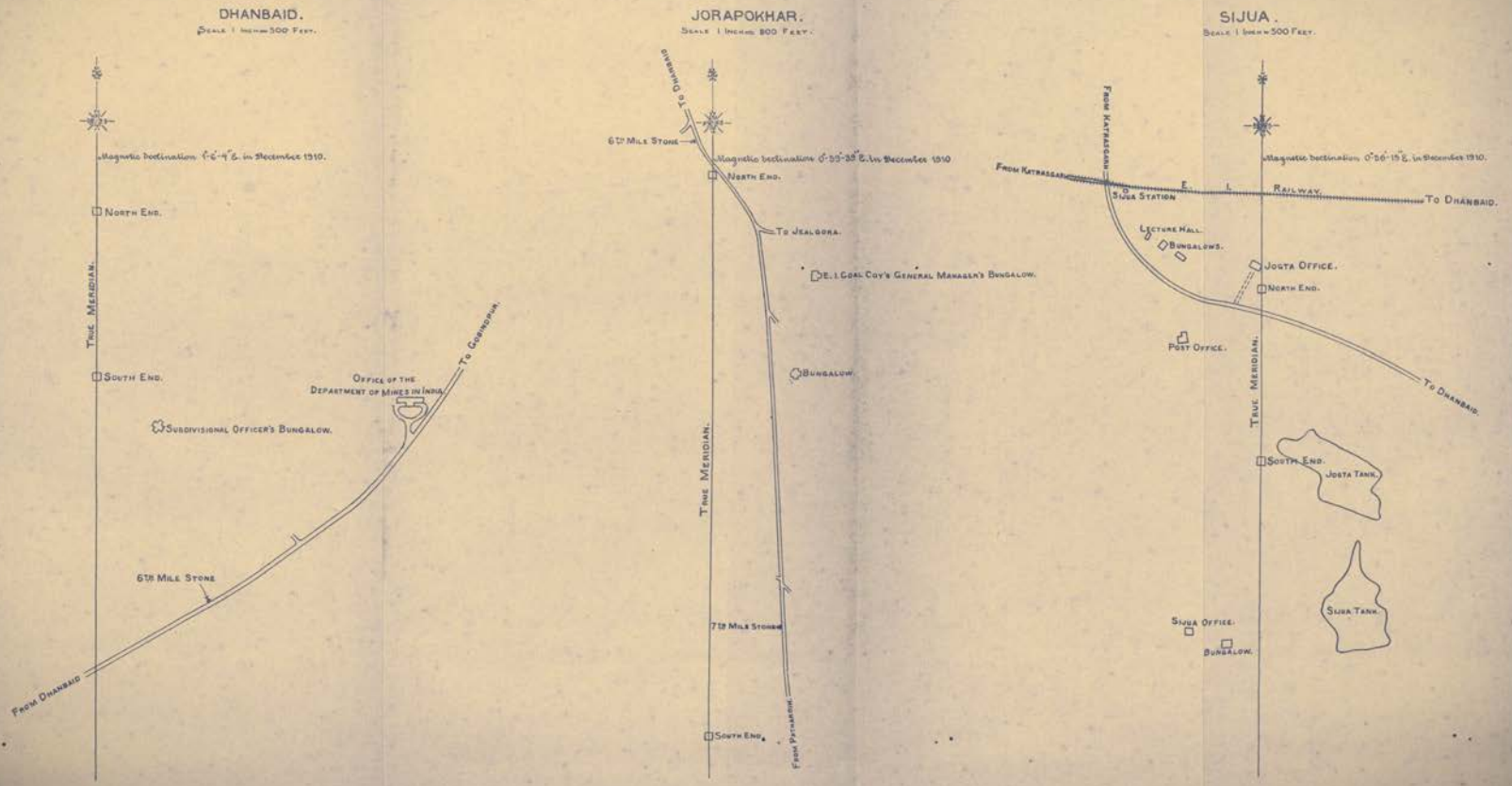
Note. Position of girders after the accident shewn in red

Reg. No. 1377 E., 12.—V.—1,000.

JHARIA COAL FIELD.

PLAN SHOWING THE EXACT LOCATION OF TRUE NORTH LINE PILLARS LAID DOWN BY THE SURVEY OF INDIA.

THE AVERAGE MAGNETIC DECLINATION VARIES AT THE RATE OF 4 MINUTES ANNUALLY.



Note. When checking these instruments at any of these stations surveyors should remove from their persons all iron & steel such as knives, keys, iron spectacles &c.

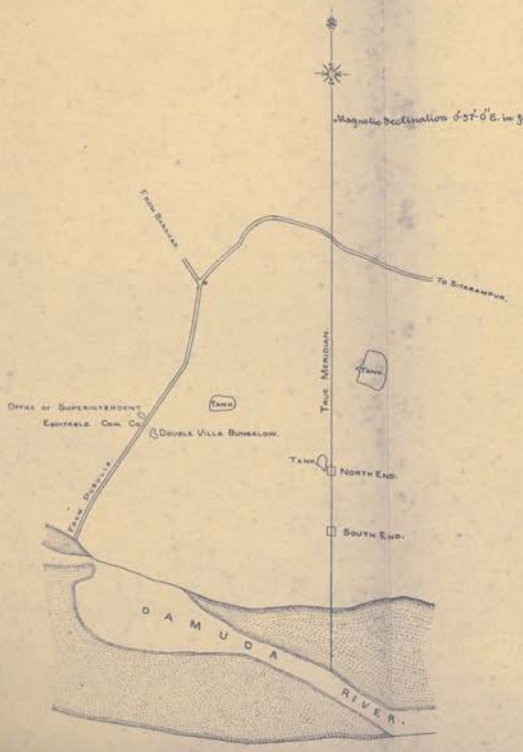
RANIGANJ COAL FIELD.

PLAN SHOWING THE EXACT LOCATION OF TRUE NORTH LINE PILLARS LAID DOWN BY THE SURVEY OF INDIA.

THE AVERAGE MAGNETIC DECLINATION VARIES AT THE RATE OF 4 MINUTES ANNUALLY.

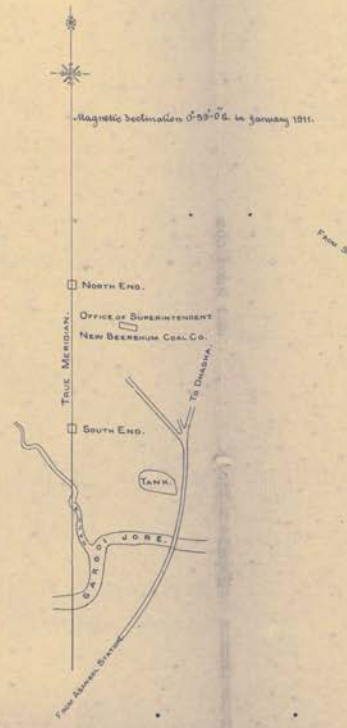
DISHARGARH.

Scale 1 Inch=1000 Feet.



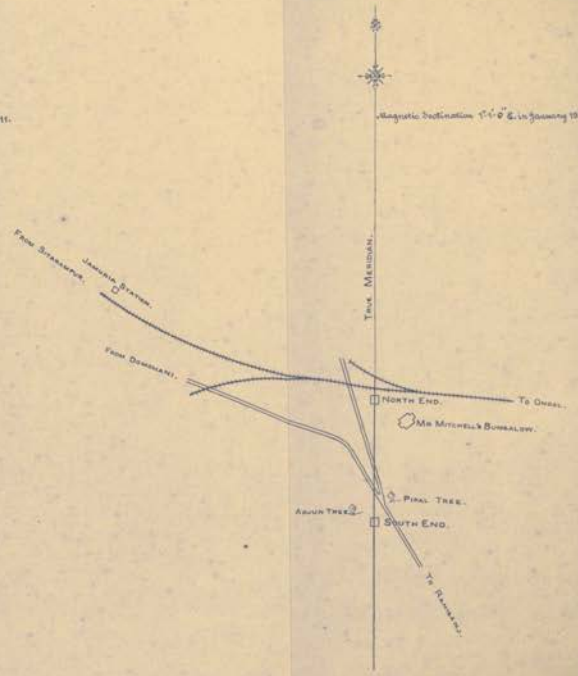
DHADKA.

Scale 1 Inch=500 Feet.



NANDI.

Scale 1 Inch=500 Feet.



Note. When checking their instruments at any of these stations surveyors should remove from their persons all iron & steel such as knives, keys, iron spectacles &c.

APPENDIX I.

STATISTICS OF MINES AND MINERALS.

Table No. 1.

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1911.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines: Worked by mechanical power.	Number of mines: Not worked by mechanical power.	Number of mines inspected during the year: Number of mines inspected.	Number of mines inspected during the year: Number of inspections.	Total output.	Average number of persons employed daily in and about the mines: Below ground: Adult males.	Below ground: Adult females.	Below ground: Children (under 12).	Below ground: Total below ground.	Above ground: Adult males.	Above ground: Adult females.	Above ground: Children (under 12).	Above ground: Total above ground.	Grand total below and above ground.
							A.—COAL.									
							Tons.									
Bengal	Hazaribagh: Bokaro-Ramgarh	3	...	3	...	...	468	11	11	...	22	2	1	...	3	25
	Hazaribagh: Jharia	2	...	2	...	...	55	...	...	...	...	8	3	...	11	11
	Hazaribagh: Giridih	6	5	1	5	9	704,443	3,123	1,175	6	4,304	1,607	915	73	2,595	6,899
	Manbhum: Jharia	196	115	81	161	314	6,373,673	19,074	14,374	299	33,747	12,623	6,049	1,019	19,691	53,438
	Manbhum: Raniganj	55	10	45	48	93	451,273	2,350	936	2	3,288	926	493	22	1,441	4,729
	Bankura, Raniganj	2	...	2	1	1	7,057	33	20	...	53	6	7	...	13	66
	Sonthal Parganas: Raniganj	2	...	2	...	...	2,109	12	5	...	17	5	4	...	9	26
	Sonthal Parganas: Rajmahal	2	...	2	...	...	1,978	8	3	...	11	2	4	...	6	17
	Palamau, Daltonganj	1	1	...	...	...	70,662	174	179	16	369	216	37	40	293	662
	Birbhum, Raniganj	1	...	1	...	...	1,258	7	5	...	12	7	2	...	9	21
	Burdwan, Raniganj	151	132	19	134	259	3,850,259	15,208	7,256	175	22,639	7,391	3,588	226	11,205	33,844
	Sambalpur, Hingir-Rampur	1	1	...	1	1	5,669	115	...	...	115	119	11	...	130	245
	Total	422	264	158	350	677	11,468,904	40,115	23,964	498	64,577	22,912	11,114	1,380	35,406	99,983

Table No. 1—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1911.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Total output.	Average number of persons employed daily in and about the mines.								Grand total below and above ground.
								Below ground.				Above ground.				
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
							A.—COAL—*contd.*									
							Tons.									
Central Provinces	Chhindwara, Pench Valley	2	2	...	2	2	63,030	195	144	7	346	86	27	11	124	470
	Narsinghpur, Mohpani	1	1	...	...	...	51,983	468	204	...	672	357	58	...	415	1,087
	Chanda, Ballarpur	1	1	...	1	2	96,603	585	...	...	585	150	...	...	150	735
	Total	4	4	...	3	4	211,616	1,248	348	7	1,603	593	85	11	689	2,292
Panjab	Jhelum	8	1	7	...	...	26,982	873	...	..	873	454	...	11	465	1,338
	Shahpur	1	...	1	...	...	1,071	20	...	...	20	10	4	1	15	35
	Mianwali	1	...	1	...	...	2,522	43	...	...	43	88	1	...	89	132
	Total	10	1	9	...	...	30,575	936	...	...	936	552	5	12	569	1,505
Eastern Bengal and Assam	Lakhimpur	8	6	2	7	14	294,893	944	267	...	1,211	464	250	40	754	1,965

Baluchistan	Sibi	4	1	3	1	8	42,410	527	...	...	527	279	...	31	310	837
	Loralai	1	...	1	1	1	188	8	..	...	8	3	...	...	3	11
	TOTAL	5	1	4	2	9	42,598	535	...	...	535	282	...	31	313	848
North-West Frontier Province.	Hazara	1	...	1	...	...	140	5	...	...	5	...	...	...	...	5
	GRAND TOTAL (COAL) FOR 1911.	450	276	174	362	704	12,048,726	43,783	24,579	505	68,867	24,803	11,454	1,474	37,731	106,598
	" " OF PRECEDING YEAR.	443	283	160	290	575	11,387,716	43,182	23,654	589	67,425	25,149	11,212	1,499	37,860	105,285
	DIFFERENCE	+7	—7	+14	+72	+129	+661,010	+601	+925	—84	+1,442	—346	+242	—25	—129	+1,313
							B.—MICA.									
							Cwts.									
Bengal	Monghyr	7	...	7	...	...	343	82	74	32	188	71	28	20	119	307
	Hazaribagh	404	13	391	75	77	18,601	3,964	1,507	226	5,697	1,643	1,595	1,174	4,412	10,109
	Gaya	18	...	18	...	...	5,089	574	216	52	842	94	228	215	537	1,379
	TOTAL	429	13	416	75	77	24,033	4,620	1,797	310	6,727	1,808	1,851	1,409	5,068	11,795
Madras	Nellore	51	2	49	34	34	7,046	1,295	936	84	2,315	271	419	493	1,183	3,498
	Salem	1	...	1	...	...	77	20	...	...	20	3	...	10	13	33
	TOTAL	52	2	50	34	34	7,123	1,315	936	84	2,335	274	419	503	1,196	3,531

Table No. 1—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1911.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines: Worked by mechanical power.	Number of mines: Not worked by mechanical power.	Number of mines inspected during the year: Number of mines inspected.	Number of mines inspected during the year: Number of inspections.	Total output.	Average number of persons employed daily in and about the mines: Below ground: Adult males.	Below ground: Adult females.	Below ground: Children (under 12).	Below ground: Total below ground.	Above ground: Adult males.	Above ground: Adult females.	Above ground: Children (under 12).	Above ground: Total above ground.	Grand total below and above ground.
							B.—MICA—*contd.*									
							Cwts.									
Rajputana	Ajmer-Merwara	7	...	7	6	6	530	146	...	...	146	23	37	42	102	248
	GRAND TOTAL (Mica) for 1911.	488	15	473	115	117	31,686	6,081	2,733	394	9,208	2,105	2,307	1,954	6,366	15,574
	„ „ of preceding year.	227	7	220	134	138	21,375	5,207	2,514	247	7,968	1,828	2,066	1,639	5,533	13,501
	Difference	+261	+8	+253	—19	—21	+10,311	+874	+219	+147	+1,240	+277	+241	+315	+833	+2,073
							C.—MANGANESE.									
							Tons.									
Central Provinces	Nagpur	15	2	13	13	19	148,479	1,627	1,252	11	2,890	419	258	26	703	3,593
	Bhandara	9	...	9	2	4	77,990	375	266	...	641	456	372	10	838	1,479
	Balaghat	6	...	6	3	9	110,794	1,201	833	59	2,093	270	95	5	370	2,463
	Chhindwara	2	1	1	1	1	1,540	22	28	...	50	33	50	..	83	133
	Total	32	3	29	19	33	338,803	3,225	2,379	70	5,674	1,178	775	41	1,994	7,668
Madras	Vizagapatam	10	1	9	2	2	57,293	1,452	643	...	2,095	346	198	65	609	2,704

Bombay	Panch Mahals . . .	2	1	1	2	3	45,330	670	365	58	1,093	261	130	28	419	1,512
	GRAND TOTAL (MANGANESE) FOR 1911.	44	5	39	23	38	441,426	5,347	3,387	128	8,862	1,785	1,103	134	3,022	11,884
	" " OF PRECEDING YEAR.	41	7	34	4	8	468,669	4,803	2,720	78	7,601	2,311	1,261	174	3,746	11,347
	DIFFERENCE . . .	+3	—2	+5	+19	+30	- 27,243	+544	+667	+50	+1,261	—526	—158	—40	—724	+537
							D.—LIMESTONE.									
							Tons.									
Central Provinces . .	Jabalpur, Katni . . .	20	1	19	27	30	92,442	830	973	176	1,979	531	792	80	1,403	3,382*
Panjab	Hoshiarpur	1	...	1	...	...	250	40	...	...	40	50	...	...	50	90
	GRAND TOTAL (LIMESTONE) FOR 1911.	21	1	20	27	30	92,692	870	973	176	2,019	581	792	80	1,453	3,472
	" " OF PRECEDING YEAR.	19	1	18	...	...	81,258	734	818	33	1,585	340	537	48	925	2,510
	DIFFERENCE . .	+2	...	+2	+27	+30	+11,434	+136	+155	+143	+434	+241	+255	+32	+528	+962
							E.—SALT.									
							Tons.									
Panjab	Shahpur	1	...	1	...	...	5,608	24	25	5	54	..	...	...	...	54
	Jhelum	2	...	2	...	...	108,156	371	324	49	744	33	...	...	33	777
	Mianwali	1	...	1	...	...	10,839	59	...	...	59	...	...	...	...	59
	GRAND TOTAL (SALT) FOR 1911.	4	...	4	...	...	124,603	454	349	54	857	33	...	...	33	890
	" " OF PRECEDING YEAR.	4	...	4	...	...	119,867	479	389	59	927	31	...	...	31	958
	DIFFERENCE . .	...	...	...	...	...	+4,736	—25	—40	—5	—70	+2	..	...	+2	—68

* Includes figures for fuller's earth.

STATISTICS OF MINES AND MINERALS—*contd.*

Table No. 1—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1911.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of Mines.		Number of mines inspected during the year.		Total output.	Average number of persons employed daily in and about the mines.								Grand total below and above ground.
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		Below ground.				Above ground.				
								Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
							F.—GEMS.									
							(*a*) **Rubies.** Carats.									
	Mogok						222,968									
							(*b*) **Sapphires.**									
Burma	Mogok	6	6	...	...	...	17,269	680	...	...	680	825	...	...	825	1,505
							(*c*) **Spinels.**									
	Mogok						47,976									
	TOTAL	6	6	...	...	...	288,213	680	...	...	680	825	...	...	825	1,505
							(*d*) **Diamonds.**									
Madras	Kurnool	1	...	1	...	...	3	28	7	2	37	...	...	...	...	37
	GRAND TOTAL (GEMS) FOR 1911.	7	6	1	...	...	288,216	708	7	2	717	825	...	...	825	1,542
	„ „ OF PRECEDING YEAR.	7	5	2	1	1	262,032	637	4	...	641	842	12	7	861	1,502
	DIFFERENCE	...	+1	−1	−1	−1	+26,184	+71	+3	+2	+76	−17	−12	−7	−36	+40

G.—SLATE.																	
							Tons.										
Bengal	Monghyr	6	...	6	1	1	1,014	45	23	...	68	108	17	27	152	220
Panjab	Kangra	5	...	5	7	7	4,112	108	...	...	108	199	63	61	323	431
	Gurgaon	3	...	3	1	1	2,009	46	...	29	75	89	...	6	95	170
	TOTAL	8	...	8	8	8	6,121	154	...	29	183	288	63	67	418	601
	GRAND TOTAL (SLATE) FOR 1911.	14	...	14	9	9	7,135	199	23	29	251	396	80	94	570	821
	„ „ OF PRECEDING YEAR.	11	...	11	8	12	6,907	192	49	26	267	271	34	45	350	617
	DIFFERENCE	+3	...	+3	+1	—3	+228	+7	—26	+3	—16	+125	+46	+49	+220	+204
H.—GOLD.																	
							Ozs.										
Bombay	Dharwar	1	1	...	...	...	2,993	...	...	...	...	239	17	8	264	264
Madras	Anantapur	3	2	1	3	3	5,284	560	...	...	560	461	52	37	550	1,110
	GRAND TOTAL (GOLD) FOR 1911.	4	3	1	3	3	8,277	560	...	...	560	700	69	45	814	1,374
	„ „ OF PRECEDING YEAR.	4	4	..	3	3	3,269	636	...	...	636	703	147	37	887	1,523
	DIFFERENCE	...	—1	+1	...	...	+5,008	—76	...	..	—76	—3	—78	+8	—73	—149
I.—IRON.																	
							Tons.										
Bengal	Singhbhum	1	...	1	...	...	36,276	341	...	32	373	545	410	...	955	1,328
Central Provinces	Jabalpur	1	...	1	...	...	325	10	25	5	40	...	...	...	...	40
	GRAND TOTAL (IRON) FOR 1911.	2	...	2	..	...	36,601	351	25	37	413	545	410	...	955	1,368
	„ „ OF PRECEDING YEAR.	6	...	6	...	...	17,646	110	210	...	320	110	211	...	321	641
	DIFFERENCE	—4	...	—4	...	...	+18,955	+241	—185	+37	+93	+435	+199	...	+634	+727

STATISTICS OF MINES AND MINERALS—*contd.*

Table No. 1—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1911.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines: Worked by mechanical power.	Number of mines: Not worked by mechanical power.	Number of mines inspected during the year: Number of mines inspected.	Number of mines inspected during the year: Number of inspections.	Total output.	Average number of persons employed daily in and about the mines: Below ground: Adult males.	Below ground: Adult females.	Below ground: Children (under 12).	Below ground: Total below ground.	Above ground: Adult males.	Above ground: Adult females.	Above ground: Children (under 12).	Above ground: Total above ground.	Grand total below and above ground.
							J.—WOLFRAMITE.									
							Cwts.									
Burma	Mergui	1	1	...	...	...	160	...	...	...	...	...	...	...	...	...*
	Tavoy	3	...	3	...	...	8,234	388	...	5	393	152	...	...	152	545
	Total	4	1	3	...	...	8,394	388	...	5	393	152	...	...	152	545
	GRAND TOTAL (Wolframite) for 1911.	4	1	3	...	...	8,394	388	...	5	393	152	...	...	152	545
	„ „ of preceding year.	1	...	1	...	...	18	41	25	...	66	11	16	...	27	93
	Difference	+3	+1	+2	...	...	+8,376	+347	—25	+5	+327	+141	—16	...	+125	+452
							K. MAGNESITE.									
							Tons.									
Madras	Salem	1	...	1	...	...	3,490	150	105	33	288	24	10	5	39	327
	Total of preceding year	1	...	1	1	1	5,182	250	200	350	800	50	...	50	100	900
	Difference	...	...	...	—1	—1	—1,692	—100	—95	—317	—512	—26	+10	—45	—61	—573

* Labour figures included with those for tin.

L.—CHROMITE. Cwts.																
Baluchistan	Quetta-Pishin	4	1	3	4	5	5,380	8	...	...	8	1	...	...	1	9
	TOTAL OF PRECEDING YEAR	4	1	3	...	...	6,440	8	...	...	8	...	...	...	...	8
	DIFFERENCE	...	..	...	+4	+5	—1,060	...	...	...	...	+1	...	...	+1	+1
M.—COPPER ORE. Tons.																
Bengal	Singhbhum	1	1	...	1	4	2,079	423	313	51	787	533	...	3	536	1,323
	TOTAL OF PRECEDING YEAR	1	1	...	...	...	864	80	...	...	80	1,600	1,040	120	2,760	2,340
	DIFFERENCE	...	...	...	+1	+4	+1,215	+343	+313	+51	+707	—1,067	—1,040	—117	—2,224	—1,517
N.—FULLER'S EARTH. Tons.																
Central Provinces	Jabalpur	1	...	1	1	1	118	...	...	...	...	...	...	...	...	...*
	TOTAL OF PRECEDING YEAR	1	...	1	...	...	84	...	...	..	...	...	..	...	...	...
	DIFFERENCE	...	...	...	+1	+1	+34	...	...	...	...	...	...	...	...	...
O.—CLAY. Tons.																
Central Provinces	Jabalpur	3	1	2	1	1	14,927	27	46	...	73	21	7	...	28	101
	TOTAL OF PRECEDING YEAR	3	...	3	...	...	15,223	29	57	...	86	20	6	...	26	112
	DIFFERENCE	...	+1	—1	+1	+1	—296	—2	—11	...	—13	+1	+1	...	+2	—11
P.—GALENA. Cwts.																
Burma	Mandalay	1	1	...	...	...	...	4	...	...	4	2	2	...	4	8

* Labour figures included with those for limestone.

Table No. 1—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1911.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Total output.	Average number of persons employed daily in and about the mines.								Grand total below and above ground.
								Below ground.				Above ground.				
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
							P.—GALENA—*contd.* Cwts.									
Madras	Kurnool	1	...	1	...	...	4	9	9	3	21	...	...	...	...	21
	GRAND TOTAL (GALENA) FOR 1911.	2	1	1	...	...	4	13	9	3	25	2	2	...	4	29
	„ „ OF PRECEDING YEAR.	1	...	1	...	...	460	1,270	...	...	1,270	635	716	...	1,351	2,621
	DIFFERENCE	+1	+1	...	...	...	—456	—1,257	+9	+3	—1,245	—633	—714	...	—1,347	—2,592
							Q.—TIN. Cwts.									
Bengal	Hazaribagh	1	...	1	...	...	3	6	...	...	6	7	...	...	7	13
Burma	Mergui	1	1	...	...	...	280	30	...	...	30	30	...	...	30	60*
	GRAND TOTAL (TIN) FOR 1911.	2	1	1	...	...	283	36	...	...	36	37	...		37	73
	„ „ OF PRECEDING YEAR.	2	1	1	...	...	1,103	27	...	...	27	44	...	...	44	71
	DIFFERENCE	...	...	...	...	...	—820	+9	...	...	+9	—7	...	...	—7	+2

							R.—STEATITE.										
							Cwts.										
Central Provinces . .	Jabalpur	2	...	2	1	1	8,816	16	...	...	16	22	13	...	35	51
Madras	Kurnool	1	...	1	1	1	3,320	15	12	11	38	...	...	...	...	38
	GRAND TOTAL (STEATITE) FOR 1911.	3	...	3	2	2	12,136	31	12	11	54	22	13	...	35	89
	„ „ OF PREVIOUS YEAR.	4	...	4	1	1	3,468	36	20	..	56	31	30	3	64	120
	DIFFERENCE . . .	—1	...	—1	+1	+1	+8,668	—5	—8	+11	—2	—9	—17	—3	—29	—31
							S.—GRAPHITE.										
							Cwts.										
Madras . . .	Vizagapatam . . .	1	...	1	...	...	1,076	10	1	..	11	2	12	...	14	25
	TOTAL of preceding year .	1	...	1	...	...	5,171	11	4	...	15	5	11	...	16	31
	DIFFERENCE . . .	...	...	...	...	...	—4,095	—1	—3	...	—4	—3	+1	...	—2	—6
							T.—CORUNDUM.										
							Cwts.										
Madras . . .	Trichinopoly . . .	1	...	1	...	...	2,167	30	120	75	225	10	30	25	65	290
	TOTAL preceding year . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	DIFFERENCE . . .	+1	...	+1	...	...	+2,167	+30	+120	+75	+225	+10	+30	+25	+65	+290
							U.—SAMARSKITE.										
							Cwts.										
Madras . . .	Nellore	1	1	...	..	...	24	2	...	...	2	...	...	...	...	2
	TOTAL preceding year . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	DIFFERENCE . . .	+1	+1	...	...	...	+24	+2	...	...	+2	...	...	...	...	+2

* Includes labour figures for wolframite,

STATISTICS OF MINES AND MINERALS—*concld.*

Table No. 1—*concld.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1911.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Total output.	Average number of persons employed daily in and about the mines.								Grand total below and above ground.
								Below ground.				Above ground.				
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12)	Total above ground.	
	GRAND TOTAL (ALL MINERALS).	1,058	313	745	548	914	Tons. 12,771,797 Cwts. 61,150 Ounces. 8,277 Carats. 288,216	59,471	32,682	1,503	93,656	32,577	16,289	3,814	52,680	146,336
	GRAND TOTAL PRECEDING YEAR.	781	310	471	442	739	Tons. 12,103,439 Cwts. 37,575 Ounces. 3,269 Carats. 262,032	57,732	30,664	1,382	89,778	33,981	17,299	3,622	54,902	144,680
	DIFFERENCE . . .	+277	+3	+274	+106	+175	Tons. +668,358 Cwts. +23,575 Ounces. +5,008 Carats. +26,184	+1,739	+2,018	+121	+3,878	—1,404	—1,010	+192	—2,222	+1,656

APPENDIX I—*contd.*

Table No. 2.

Number of mines opened and closed during the year ending 31st December 1911.

Province.	District.	Number of mines opened.	Number of mines closed.
	A.—COAL.		
Bengal	Hazaribagh — Bokaro-Ramgarh	3	1
	Hazaribagh — Giridih	1	...
	Manbhum — Jharia	14	10
	Manbhum — Raniganj	10	11
	Burdwan — Raniganj	10	14
	Sonthal Parganas — Raniganj	1	...
	Sonthal Parganas — Rajmahal	...	1
Total		39	37
Panjab	Jhelum	2	2
Eastern Bengal and Assam	Lakhimpur	1	...
Total (Coal)		42	39
	B.—MICA.		
Bengal	Monghyr	3	1
	Hazaribagh	95	76
	Gaya	...	4
Total		98	81
Madras	Nellore	15	9
Rajputana	Ajmer-Merwara	2	2
Total (Mica)		115	92
	C.—MANGANESE.		
Central Provinces	Bhandara	3	1
Madras	Vizagapatam	1	2
Total (Manganese)		4	3
	D.—LIMESTONE.		
Central Provinces	Jabalpur	3	4
	E.—SALT.		
Panjab	Jhelum	1	...
	F.—GOLD.		
Bombay	Dharwar	...	1
Madras	Anantapur	1	...
Total (Gold)		1	1
	G.—IRON.		
Central Provinces	Jabalpur	1	...
	H.—WOLFRAMITE.		
Burma	Tavoy	2	...
	I.—GALENA.		
Madras	Kurnool	1	...
	J.—TIN.		
Bengal	Hazaribagh	...	1
	K.—STEATITE.		
Central Provinces	Jabalpur	...	2
	L.—GRAPHITE.		
Madras	Vizagapatam	...	1
	M.—SAMARSKITE.		
Madras	Nellore	1	...
GRAND TOTAL		171	143

APPENDIX I—*concld.*

Table No. 3.

The following table shows the fluctuations in the output of the principal minerals raised from mines classed under the Indian Mines Act, 1901. The other minerals raised are gems, slate, gold, iron ore, magnesite, chromite, copper ore, tin, steatite, graphite, fuller's earth, clay, galena, wolframite, corundum and samarskite.

Year.	Coal.	Manganese.	Mica.	Limestone.	Salt.
	Tons.	Tons.	Cwts.	Tons.	Tons.
1902 . . .	6,790,507	144,037	21,360	30,091	87,361
1903 . . .	6,812,725	171,223	20,100	35,238	99,067
1904 . . .	7,561,338	138,733	21,320	50,847	107,413
1905 . . .	7,770,471	204,194	25,548	93,170	94,078
1906 . . .	9,112,663	436,442	50,438	48,836	118,023
1907 . . .	10,526,468	642,082	44,919	73,222	101,703
1908 . . .	12,149,020	494,942	46,208	101,569	93,779
1909 . . .	11,294,227	357,205	32,011	56,502	126,987
1910 . . .	11,387,716	468,669	21,375	81,258	119,867
1911 . . .	12,048,726	441,426	31,686	92,692	124,603

Table No. 4.

The following table shows the amount of coal raised, the average number of persons working daily and the death-rates during the years 1902 to 1911 in respect of coal mines under the Indian Mines Act, 1901.

Year.	Amount of coal raised.	Average number of persons working daily below and above ground.	Number of deaths below and above ground.	Death rates.	
				Per 1,000,000 tons raised.	Per 1,000 persons working daily below and above ground.
1902 . . .	6,790,507	89,503	59	8·69	·66
1903 . . .	6,812,725	79,561	67	9·83	·84
1904 . . .	7,561,338	82,002	55	7·27	·67
1905 . . .	7,770,471	79,506	58	7·46	·72
1906 . . .	9,112,663	90,159	80	8·78	·89
1907 . . .	10,526,468	102,689	89	8·45	·86
1908 . . .	12,149,020	120,107	164	13·49	1·36
1909 . . .	11,294,227	109,291	119	10·53	1·08
1910 . . .	11,387,716	105,285	160	14·05	1·52
1911 . . .	12,048,726	106,598	148	12·28	1·38

Table No. 5.

Statement showing the output of coal, the number of persons employed and the number of tons of coal raised per person employed in and about the coal mines of the principal coal-producing countries of the world.

Year.	Country.	Tons of coal raised.	Persons employed.	Tons raised per person employed.
1910	United Kingdom . . .	264,417,588	1,049,407	251
1909	United States	411,435,581	666,555	617
,,	Germany	214,011,297	688,196	311
,,	Austria	48,041,945	194,884	247
,,	France	37,242,435	190,748	195
,,	Belgium . . .	23,146,111	143,051	162
,,	Nova Scotia	5,217,915	12,083	432
,,	British Columbia . . .	2,400,600	6,418	374
,,	Australia	8,185,593	26,988	303
,,	Natal	1,786,583	9,117	195
,,	Transvaal	3,235,407	8,560	377
,,	Japan	14,810,441	152,515	97
,,	New Zealand	1,911,247	4,191	456
1908	Russia	25,494,436	174,061	146
		1,061,337,179	3,326,724	319
1911	**British India . . . .**	**12,048,726**	**106,598**	**113**

APPENDIX II.

ACCIDENTS IN MINES.

Table No. 1.

List of Fatal Accidents in mines regulated by the Indian Mines Act, 1901, during the year 1911.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			EXPLOSIONS OF FIRE-DAMP—(*17 deaths*).			
1	12th April, 10 A.M.	Ramnagar Mine, Kulti P. O., Bengal.	Bengal Iron and Steel Co., Ld.	Lakhi Ghatwarni, (*f.*), 12, *Coal-carrier.*	Coal . .	In a mine where fire-damp had hitherto not been detected six persons entered a gallery with naked lights after it had been unworked for only four hours and ignited an accumulation of gas. All the persons sustained burns about the upper portions of their bodies and one, the deceased, a girl of 12 years of age, succumbed to her injuries 29 hours later. Inspection and inquiry made. *See Report, page 6.*
2	7th June, 5-30 P.M.	Gangutia Mine, Dishargarh P. O., Bengal.	Bengal Nagpur Coal Co., Ld.	Durga Dosadh, (*m.*), 26, *Pump khalassi.* Pirtam Dosadh, (*m.*), 22, *Pump coolie.*	Coal . .	In making an attempt to retrace their steps to the surface through some abandoned workings, which they had passed through without authority earlier in the day, the two deceased, carrying naked lights, lost their way and entered a place full of gas when an explosion occurred which resulted in their deaths. Inspection and inquiry made. *See Report, page 8.*
3	9th November, 8-35 A.M.	Kendwadih Mine, Kusunda P. O., Bengal.	East Indian Coal Co., Ld.	1. Bandhu Meah, (*m.*), 35, *Contractor.* 2. Kastaria, (*f.*), 45, *Kamin.* 3. Mustoria, (*f.*), 35, *Kamin.* 4. Basharia, (*f.*), 15, *Kamin.* 5. Jaharni, (*f.*), 12, *Kamin.* 6. Jangli Meah, (*m.*), 30, *Mason.* 7. Nazimuddin Meah, (*m.*), 14, *Coolie.* 8. Sukni Pashin, (*f.*), 35, *Kamin.* 9. Foudi Shonor, (*m.*), 25, *Trollyman.* 10. Jhagho Dosadh, (*m.*), 25, *Hookman.* 11. Budhan Barrahoi, (*m.*), 22, *Coolie.* 12. Sibcharan Barrahoi, (*m.*), 16, *Coolie.* 13. Imamom Meah, (*m.*), 45, *Mason.* 14. Bux Meah, (*m.*), 25, *Mason.*	Coal . .	A fire broke out in an old goaf and, while sixteen men and five women were engaged in building brick stoppings to dam the fire off, an explosion occurred. Four men and all the women were killed outright, one man fell down the shaft when coming up and was killed, and four men succumbed to their injuries after being rescued. The remaining seven men recovered. Inspection and inquiry made. *See Report, page 9.*

Fatal Accidents, 1911—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—(*94 deaths*).			
			(*a*) **Falls of roof**—(*51 deaths*).			
4	4th January, 1 P.M.	Kapasara Mine, Barakar P. O., Bengal.	Abdul Karim & Brothers	Fagu Mahato, (*m.*), 40, *Miner.*	Coal . .	Deceased was warned of the danger of further undercutting some overhanging roof coal. It is presumed that he disregarded the warning and continued to undercut with the result that a piece, measuring 5′ × 3½′ × 1½′, fell and killed him on the spot. Inspection and inquiry made.
5	8th January, 1 P.M.	Dandot Mine, Dandot P. O., Panjab.	North-Western Railway	Haitam, (*m.*), 28, *Miner.*	Coal . .	While deceased was cutting coal in the side of a gateway, a fall of shale 9′ long by 4′ wide by 4′ to 0″ thick occurred and he was killed instantaneously.
6	11th January, 9 A.M.	Old West Ledo Valley Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Sumri Ghatwal, (*f.*), 30, *Coal-carrier.*	Coal . .	Deceased was sitting eating food at the entrance to a "chamber," when she was struck by the fall of about one cwt. of coal from a height of four feet. She died in hospital ten days later from rupture of the spleen. Inspection and inquiry made.
7	17th January, 4 P.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway	Bakhsho, (*m.*), 40, *Miner.*	Coal .	While two miners were at work one of them felt a small stone drop from the roof on to his foot and shouted to deceased to come away. As he was crawling away a stone, 7′ × 7′ × 1′ thick, fell from a height of two feet upon him. There were no marks of injuries. He probably died from suffocation.
8	23rd January, 1-30 P.M.	Chitidand Mine, Abbottabad P. O., Panjab.	Panjab Coal Co.	Ghulam Mahomed, (*m.*), 35, *Miner.*	Coal . .	A short length of long wall face was declared unsafe by reason of a "slip" and was fenced, and all the miners in the neighbourhood were warned of the danger. Deceased, however, deliberately removed the fence when the official was in another part of the mine and commenced to cut coal. About an hour later a piece of shale, measuring 5′ × 4′ × 2′ thick, knocked out a prop and fell from between the "slip" and the face upon him and killed him outright. Inspection and inquiry made.
9	8th February, 5-15 P.M.	Kendwadih Mine, Jamadoba P. O., Bengal.	Hariladih Coal Co., Ld.	Lachman Gope, (*m.*), 34, *Timbering coolie.*	Coal . .	Contrary to orders deceased returned to the edge of a goaf from which timber had just been withdrawn and was trapped by a pane of shale, 3′ × 2¾′ × 4″, falling on one of his feet and crushing it. He succumbed four hours later from shock. Inspection and inquiry made. *See Report, page 13.*
10	9th February, 3-30 P.M.	Kurkend Mine, Kusunda P. O., Bengal.	Central Kurkend Coal Co., Ld.	Teku Rai, (*m.*), 25, *Coal-carrier.*	Coal . .	On an alarm being given by a sirdar that the roof was weighting close to where two men were working, deceased, Teku, fled under the dangerous roof and was killed outright by a piece of falling coal. The other man fled towards the sirdar and escaped. Inspection and inquiry made.

11	23rd February, 5 A.M.	Tirap Mine, Margherita P. O., Assam.	Assam Railways & Trading Co., Ld.	Parvu Bhuia, (*m.*), 25, *Coal-filler.*	Coal . .	Deceased was buried by a fall of small coal which fell from a height of 9 feet from the side of a chamber in thick coal. He probably died of suffocation. Inspection and inquiry made.
12	1st March, 11 A.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway	Khudadad, (*m.*), 32, *Mine mate.*	Coal . .	A mine carpenter had set a prop and was about to set another, when he heard the roof creak. He shouted to deceased, who was a mine mate and his superior, that the roof was bad, but deceased said it was not and told him to bring another prop. A fall occurred killing deceased. The carpenter escaped.
13	18th March, 4-30 A.M.	Sanctoria Mine, Dishargarh P. O., Bengal.	Bengal Coal Co., Ld.	Nanda Manjhi, (*m.*), 30, *Miner.*	Coal . .	Two small galleries intersecting a pillar had been joined during the night. The miners were then told to cut floor coal but deceased went back to the gallery and probably began to cut the side of it. A piece of roof coal, 5′ long × 1′ wide × 4′6″ high, fell on him and killed him on the spot. Inspection and inquiry made.
14	28th March, 4 A.M.	Mohpani Mine, Mohpani P. O., Central Provinces.	Great Indian Peninsular Railway.	Passu Gond, (*m.*), 22, *Coal-cutter.*	Coal . .	A piece of "ramble" or following stone, under which the miners hewed, instead of taking down, measuring 4′ long × 2′ wide × 6″ to 14″ thick, fell upon deceased, causing slight bruises externally. He succumbed however in five days to internal injuries.
15	1st April, 3 P.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway	Saudagar, (*m.*), 25, *Coolie.*	Coal . .	Owing to recent heavy rains weakening the roof the roof-bar of a supporting set (made of old rails) had been bent by pressure. New sets were got ready but could not be placed until the bent corrugated sheets over the old roof-bars could be raised. The under-manager was supervising the cautious removal of fallen stones above the sheets and deceased was below filling the broken stones into trams when a fall of roof, 9 feet long by 7 feet wide by 10 feet high, occurred from a height of 11 feet. The roof burst through the covering sheets and killed him instantaneously.
16	1st April, 4 P.M.	Akhalpur Mine, Nandi P. O., Bengal.	Hariladih Coal Co., Ld.	Noha Majhain, (*f.*), 80, *Dust-kamin.*	Coal . .	Deceased had gone down with food for some of the other kamins and stayed on with them. A piece of dyke weighing about 2 cwts. fell on her. She was dead when picked up. There were no signs of injuries. She probably died from shock. Inspection and inquiry made.
17	8th April, 1 P.M.	Ramkanali Mine, Katrasgarh P. O., Bengal.	Brojo Bhusan Trigunait	Asmantulla, (*m.*), 35, *Coal-cutter.* Tuna Sheik, (*m.*), 30, Kurban Sheik, (*m.*), 30. *Coal-carriers.*	Coal . .	The deceased passed through a fence and began to rob coal from the corner of a pillar. Whilst doing so they were killed on the spot by a fall of roof stone, 10 inches thick, over an area measuring 38 feet in length by 4 to 15 feet in width. Weight about 17 tons. Inspection and inquiry made. *See Report, page 13.*
18	11th April, 4-30 P.M.	Namdang Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Budhai Kahar, (*m.*), 20, *Coal-filler.*	Coal . .	Deceased was loading out coal from an "*opening*" in the middle seam, 60′ × 27′ × 16′ high, when he was killed by the fall of about 60 lbs. of coal and dirt from the roof near the bolt-hole. Inspection and inquiry made.
19	2nd May, 8-45 A.M.	Bhutgoria Mine, Jamadoba P. O., Bengal.	Aldih Coal Co., Ld.	Jogiram Gourah, (*m.*), 30, *Timber coolie.*	Coal . .	Deceased was working for a sirdar and a propping carpenter who were propping round a pillar which was being removed. A stone, 6′ × 2′ × 1″ thick, fell on him breaking over a prop which was under it. He was killed on the spot. Inspection and inquiry made.
20	6th May, 10 A.M.	Gopalichak Mine, Jharia P. O., Bengal.	Gopalichak Coal Co., Ld.	Karu Manjhi, (*m.*), 40, *Miner.* Jobani Majhain, (*f.*), 32, *Carrier.*	Coal . .	As the deceased miner was taking down some roof coal, standing on a "chair", a piece, 11′ × 8′ × 2′ to 0″, fell, overturning the chair. He and the woman carrying coal for him were killed on the spot. Inspection and inquiry made.

Fatal Accidents, 1911—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*contd.*			
			(*a*) **Falls of roof**—*contd.*			
21	25th May, 7 A.M.	Simlabahal Mine, Jharia P. O., Bengal.	Bhalgora Coal Co., Ld.	Chandbali Bilaspuri, (*m.*), 34, *Coal-cutter.*	Coal . .	Deceased was employed in widening a narrow gallery and was caught by a fall of some two tons of coal from the roof. The coal fell from a triangular cavity, 12 feet square by 4″ to 0″ thick, formed by two slippery "joints." He received internal injuries and died about twelve hours later. Inspection and inquiry made.
22	1st June, 3 A.M.	Bhaga Mine, Jharia P. O., Bengal.	Jharia Colliery Co., Ld.	Ghulam Husain, (*m.*), 30, *Coal-cutter.*	Coal . .	A sirdar had fired two shots in roof coal for a gang of miners of which deceased was one. In spite of being warned he approached the place where the shots had been fired, and while he was there a fall of coal, 10′ to 6′ 6″ × 8′ × 7′ thick, occurred, falling from a height of 8 feet. He was killed instantaneously. Inspection and inquiry made.
23	6th June, 5·30 P.M.	Chanch Mine, Barakar P. O., Bengal.	Bengal Coal Co., Ld.	Doola Manjhi, (*m.*), 19, *Miner.*	Coal . .	Deceased was cutting away without authority the side of a gallery that had been specially left to support a "slip," when a fall of roof, covering an area of 90 square ft. by 18 in. average thickness, occurred and killed him. The roof was much disturbed by small undisclosed slips. Inspection and inquiry made.
24	8th June, 2 P.M.	Dishargarh Mine, Dishargarh P. O., Bengal.	Equitable Coal Co., Ld. .	Somi Baurin, (*f.*), 30, *Coal-carrier.*	Coal . .	While the deceased was sitting on the pit bottom road waiting to go up the shaft, about a ton of coal fell from the roof upon her. She died shortly afterwards. Inspection and inquiry made. *See Report, page 14.*
25	20th June, 2 P.M.	Lomehanchi Mine, Kodarma P. O., Bengal.	Chota Nagpur Mica Syndicate, Ld.	Khedu Gope, (*m.*), 25, *Miner.*	Mica . .	The manager had ordered work to be stopped in a mine for the monsoon season. A few days after deceased and another man went to work there. Deceased went into a small tunnel to shelter from the rain, and a fall of roof and side, 11′ × 3′ × 2′, probably weakened by rain, fell and killed him instantaneously. Inspection and inquiry made.
26	27th June, 2 P.M.	Serampur Mine, Giridih P. O., Bengal.	East Indian Railway Co. .	Samtalli Meah, (*m.*), 18, *Mistri.*	Coal . .	While deceased was assisting a sirdar to set a sprag against the stone roof, a piece, 8′ long × 1½′ wide by 1′ thick, fell from a height of 16′ upon him. He died shortly after.
27	7th July, 12 Noon.	Serampur Mine, Giridih P. O., Bengal.	East Indian Railway Co. .	Jugal Chamar, (*m.*), 28, *Miner.*	Coal . .	During the process of clearing a bolt-hole of loose coal to set a cog, a fall of roof coal, measuring 15′ × 7′ × 5½′, occurred killing the deceased on the spot and injuring another man. They had been warned of the danger by an official who heard the roof weighting as he approached the place, but they failed to stand clear in time. Inspection and inquiry made.
28	19th July, 2·30 P.M.	New East Ledo Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Bami Kayasta, (*f.*), 35, *Shoveller.*	Coal . .	Deceased was shovelling coal down a road, 8 feet wide by 4 feet high, when about a ton of coal fell from between the props and buried her. General crush was afterwards noticed in this part of the mine and was the probable cause of the accident. She was killed instantaneously. Inspection and inquiry made.

29	3rd August, 7-30 A.M.	Burra Dhemo Mine, Sitarampur P. O., Bengal.	Burra Dhemo Coal Co., Ld.	Badal Manjhi, (*m.*), 45, *Miner.*	Coal . .	Four persons were making their way out of the mine, when a piece of shale, measuring 4′ × 2½′ tapering to 10″ × 8″ thick, fell from the roof of a gallery and struck deceased who was hurt internally so severely that he died 12 hours later. Another man was seriously injured but recovered. Inspection and inquiry made. *See Report, page 14.*
30	8th August, 7 A.M.	Jamadoba Mine, Jamadoba P. O., Bengal.	Indian Collieries Syndicate, Ld.	Guiram Kora, (*m.*), 30, *Coal-cutter.* Fadni Koran, (*f.*), 25, *Coal-carrier.* Tribhuban Bhumij, (*m.*), 35 *Coal-cutter.*	Coal . .	Deceased were extracting the last portion of a pillar in "broken" working, when a fall of roof shale, measuring 40 ft. square × 30′ × 3′ 6″ thick, occurred. The timber was knocked out and they were knocked down and killed on the spot. One other man escaped. Inspection and inquiry made. *See Report, page 14.*
31	8th August, 1-30 P.M.	Kendwadih Mine, Jamadoba P. O., Bengal.	Hariladih Coal Co., Ld.	Udai Bauri, (*m.*), 35, *Coal-cutter.*	Coal . .	Deceased was found cutting coal in the face of a fenced off gallery and was sent out by the sirdar. Shortly after he returned and recommenced work and was killed by the fall of a slab of roof shale, weighing about half a ton and measuring 5′ 3″ × 2′ 4″ × 6″. Inspection and inquiry made. *See Report, page 15.*
32	12th August, 7 P.M.	Sudamdih Mine, Bhujudih P. O., Bengal.	Sudamdih Coal Co., Ld.	Bepan Hari, (*m.*), 40, Mohar Hari, (*m.*), 35, *Coal-cutters.*	Coal . .	Deceased went through a fence and had no sooner begun to rob coal from a pillar, when about a ton of coal and stone fell from the roof and killed them on the spot. The gallery was 25 feet in height. Inspection and inquiry made. *See Report, page 15.*
33	14th August, 2 P.M.	Borrea Mine, Sitarampur P. O., Bengal.	New Beerbhum Coal Co., Ld.	Chand Mony Majhain, (*f.*), 14, *Coal-carrier.*	Coal . .	In a coal roof full of pronounced "joints" running parallel with the sides of a gallery, a nicking 6′ long had been made down the centre of the gallery which unlocked a slab of coal, measuring 6½′ × 3′ × 1′ 9″ thick, and allowed it to fall from a height of 9 feet. Deceased was loading up coal from under it at the time and was killed on the spot. Inspection and inquiry made.
34	9th September, 2-30 A.M.	Murulidih Mine, Mohoda P. O., Bengal.	Bengal Coal Co., Ld.	Kulu Meah, (*m.*), 16, *Stone-cutter.*	Coal . .	Deceased was one of a gang of seven stone cutters who were building a pack wall. Whilst at work a stone, 7′ × 2′ × 2′, fell from the roof. He was struck on the head and killed on the spot. Inspection and inquiry made. *See Report, page 15.*
35	12th October, 10 P.M.	Brahmanbarari Mine, Jamadoba P. O., Bengal.	East Indian Coal Co., Ld.	Ashu Majhain, (*f.*), 22, *Dust-loader.*	Coal . .	Deceased was injured by the fall of about a ton of coal from the roof of a gallery, 26 feet in height. She died on the following day. Inspection and inquiry made.
36	24th October, 1-30 A.M.	South Kustore Mine, Kustore P. O., Bengal.	Raniganj Coal Association, Ld.	Dukhan Chamar, (*m.*), 35, *Coal-cutter.*	Coal . .	Deceased was reducing a coal "knob" in a "broken" district when a fall took place in the goaf. The removal of lateral support thus caused swayed out the timber and broke down the "knob" and a portion of the roof. The fallen mass was from 5′ to 10′ long by 4′ to 10′ wide and 12′ high, and would weigh about 20 tons. Whilst trying to make his escape he ran into a prop, was thrown back under the edge of the fall, and crushed to death. Inspection and inquiry made.
37	24th October, 2 P.M.	Tirap Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Kanai Chamar, (*m.*), 36, *Sirdar.*	Coal . .	Deceased was buried by the collapse of a timbered road near the entrance to a "chamber". A miner had shouted that the coal was about to fall, but deceased shouted back that there was no danger. Inspection and inquiry made. *See Report, page 16.*
38	6th November, 1-30 P.M.	West Ledo Valley Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Behari Ahir, (*m.*), 20, *Basket-filler.*	Coal . .	Whilst deceased was filling coal in a "chamber," 12′ high, a fall of about 6 cwts. of stone came away. He sustained a compound fracture of a leg and died in hospital on the following day. Inspection and inquiry made.

Fatal Accidents, 1911—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*contd.*			
			(*a*) Falls of roof—*concld.*			
39	9th November, 12 Noon.	West Gopalichak Mine, Kusunda P. O., Bengal.	Gopalichak Coal Co., Ld.	Murat Dhobi, (*m.*), 25, *Coal-cutter.*	Coal . .	Deceased left his proper working place and commenced to cut roof coal elsewhere, although warned by other miners to desist. A mass of 6 tons of coal, measuring 7′×20′×2′ 6″, fell from the roof 10 feet above. He was killed on the spot. A sirdar had visited the place twice during the shift, but at those times deceased was in his proper working place. Inspection and inquiry made.
40	25th November, 2-30 P.M.	Gamrala Mine, Pind Dadan Khan P. O., Panjab.	Thakur Dass Ramji Dass	Mirza Khan, (*m.*), 21, Hakam Khan, (*m.*), 40, Mohamed Khan, (*m.*), 15, *Miners.*	Coal . .	On a long wall face which had recently been declared unsafe by an official and fenced, the deceased commenced to cut coal after breaking down the fence. They worked for about two hours when a slab of roof shale, measuring $10\frac{1}{3}'\times2\frac{1}{4}'\times2'$ thick, fell upon them killing two of them on the spot and fracturing the skull of the third, who died six hours later. The fall occurred between the front line of chocks and the face in a width of only three feet. Inspection and inquiry made.
41	10th December, 1-30 A.M.	Gopalichak Mine, Jharia P. O., Bengal.	Gopalichak Coal Co., Ld.	Pairu Meah, (*m.*), 35, Bunsi Dosadh, (*m.*), 34, *Miners.*	Coal . .	Deceased were working at a coal pillar in an area from which the pillars were being extracted. A fall of some 12 tons of side and roof coal took place, and knocked out the timber. They were caught and killed on the spot. Inspection and inquiry made. *See Report, page 16.*
42	15th December, 6 A.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway	Umra, (*m.*), 38, *Miner.*	Coal . .	Two shot holes had been drilled into the roof and charged ready for blasting. A piece of roof stone, 5′ long by 2′ wide by 14″ thick, fell from an unseen slip upon deceased. He died five days later. The drilling of the holes probably loosened the stone.
43	20th December, Midnight.	Chanch Mine, Barakar P. O., Bengal.	Bengal Coal Co., Ld.	Panu Manjhi, (*m.*), 26, *Coal-cutter.*	Coal . .	Deceased entered a fenced gallery to rob the side of a pillar, after he had struck a few blows with his pick a mass of sandstone, measuring 16′×9′×2′ thick, fell from a height of $8\frac{1}{2}$ feet upon him and killed him outright. A pick and a basket were found by the side of his body. Inspection and inquiry made.
44	22nd December, 5 A.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway	Abdul Mahomed, (*m.*), 28, *Miner.*	Coal . .	A small sharp piece of roof stone fell upon deceased, cutting his forehead. He went home and many hours after went to hospital to be treated. The base of the skull proved to have been fractured and death followed.
45	29th December, 6 A.M.	Upper Ledo Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Ramani, (*f.*), 24, *Coal-carrier.*	Coal . .	The miners were about to cease work at the end of the day, when a sudden crush occurred in an "opening" or "chamber" without warning. They ran out but deceased was caught by a fall of two tons of coal and killed. Two other persons were injured but have recovered. A sirdar was present. Inspection and inquiry made.

(*b*) **Falls of sides**—(*43 deaths*).

46	10th January, 9-30 A.M.	Brahmanbarari Mine, Jamadoba P. O., Bengal.	East Indian Coal Co., Ld.	Jogi Ram Dass, (*m.*), 36, *Coal-cutter.*	Coal	Deceased went beyond a fence and began to cut coal from the corner of a pillar. As soon as he had undercut as far as a smooth "joint," a mass of about 5 tons of coal fell away and killed him on the spot. Inspection and inquiry made.
47	11th January, 9 A.M.	Benahir Mine, Jharia P. O., Bengal.	Standard Coal Co., Ld.	Sukharia Chamarin, (*f.*), 35, *Coal-carrier.*	Coal	Floor coal was being cut in a gallery already 20 feet high. A miner wrongfully undermined the corner of a pillar with the result that a mass of 10 tons of coal fell from a slippery "joint." He escaped, but deceased, who was passing the place at the time, was struck and received injuries from which she died two days later. Inspection and inquiry made. *See Report, page 16.*
48	1st March, 5-30 P.M.	Burragarh Mine, Jharia P. O., Bengal.	Panjab and Bengal Coal Co., Ld.	Kunji Kurmi, (*m.*), 20, *Coal-cutter.*	Coal	Deceased remained behind when the rest of the workmen had finished work, and went into an unused gallery, where he began to cut overhanging coal from the side of a pillar. Whilst doing so a mass of coal, 7′ × 4′ × 30″ to 10″, weighing about 2 tons, fell upon him causing injuries from which he died two hours later. Inspection and inquiry made.
49	11th March, 2-30 P.M.	Kusunda Mine, Kusunda P. O., Bengal.	Kusunda and Nayadi Collieries, Ld.	Sohori Bhuia, (*f.*), 35, *Coal-carrier.*	Coal	Deceased and another woman were carrying coal in a district which was being goafed, when about 2 cwts. of coal fell from an area of about 2′ × 3′ at the top of the corner of a pillar and from a height of 14 feet. They were struck by the falling coal. Deceased sustained cuts on her body and an internal strain, due to falling, from which she died nine days afterwards. Inspection and inquiry made.
50	27th March, 11-30 P.M.	Kendwadih Mine, Jamadoba P. O., Bengal.	Hariladih Coal Co., Ld.	Feringhi Teli, (*m.*), 45, *Coal-cutter.*	Coal	Whilst deceased and another miner were undercutting at the dip side of a pillar in a "broken" district a wedge of coal, 9′ × 6′ × 40″ to 0″, and weighing about two tons, fell away from a "joint" and struck them. He was killed on the spot and the other miner sustained a severe injury to one of his feet. Inspection and inquiry made. *See Report, page 17.*
51	4th April, 1 P.M.	Chandametta Mine, Pench Valley P. O., Central Provinces.	Pench Valley Coal Co., Ld.	Baila Garpagaran, (*f.*), 52, *Coal-filler.*	Coal	As deceased and a miner were raising a basket of coal, a piece of side coal, 8 feet long by 5½ feet high by 2½ feet thick, fell upon them and injured them both. Deceased died twenty-four days afterwards from the effect of the injuries received. Inspection and inquiry made.
52	4th April, 10-30 P.M.	Kantapahari Mine, Panuria P. O., Bengal.	Barakar Coal Co., Ld.	Lobin Manjhi, (*m.*), 25, *Miner.*	Coal	Deceased started to rob the corner of a pillar close to the end of the haulage road and consequently close to the tubs. A piece of overhanging coal, 2′ × 2′ × 1½′, fell from a height of 7 feet and crushed his left leg. The leg was amputated, but he died after the operation from shock. Inspection and inquiry made.
53	6th April, 4-30 P.M.	Murwara Mine, Murwara P. O., Central Provinces.	J. N. Mitter	Dhanna, (*m.*), 15, *Coolie.*	Limestone	Deceased went into a limestone quarry to fetch some water. A fall occurred from the side of the quarry and struck him. He was thrown into the water and drowned.
54	26th April, 3-30 P.M.	Charki Mine, Domchanch P. O., Bengal.	F. F. Chrestien & Co.	Sanichari Moshairni, (*f.*), 40, Pachia Moshairni, (*f.*), 10, Tetri Turin, (*f.*), 30, *Earth-carriers.* Baro Jola, (*m.*), 20, *Miner.*	Mica	As deceased were carrying mica to an unworked part of the mine, where it was to be sorted, the hanging wall (schist) collapsed for a length of 25 feet and a height of 24 feet, killing Pachia, Tetri, and Baro immediately. Sanichari died on the way to hospital. The schist that fell averaged about 2 feet in thickness. Inspection and inquiry made. *See Report, page 17.*

Fatal Accidents, 1911—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*contd.*			
			(*b*) Falls of sides—*contd.*			
55	1st May, 1 A.M.	Baraboni Mine, Asansol P. O., Bengal.	Baraboni Coal Concern, Ld.	Mungla Bux, (*m.*), 48, *Coal-cutter.*	Coal .	Deceased with others was told to get a piece of coal off a side which had been left hanging after a pillar had been got in an old road, which the manager was opening out to get at some pillars. Instead of attacking it at the side he tried to put a shot hole in front and the mass, which was 7′ × 4′ × 2′ 6″ high, fell from a height of ten feet on him and killed him at once. Inspection and inquiry made.
56	4th May, 5 P.M.	Khas Jharia Mine, Jharia P. O., Bengal.	J. R. Agarwalla . .	Lakhu Bauri, (*m.*), 32, *Coal-cutter.*	Coal .	Deceased had just commenced to rob coal from the side of a fenced gallery, when he was caught by a fall of side coal, measuring 33 feet in length by 11 feet in height and 4′ to 0″ thick, and weighing 26 tons. Inspection and inquiry made.
57	17th May, 3-30 A.M.	Bhaga Mine, Jharia P. O., Bengal.	Jharia Colliery Co., Ld. .	Thakur Das Bauri, (*m.*), 30, *Coal-cutter.*	Coal .	Whilst robbing coal in an unused gallery deceased was killed by the fall of some 50 tons of coal from the side of a pillar. The fall was 17′ long by 24′ high and 4′ to 2′ thick. Inspection and inquiry made.
58	3rd June, 1-30 P.M.	Kantapahari Mine, Panuria P. O., Bengal.	Barakar Coal Co., Ld. .	Talu Manjhi, (*m.*), 35, *Miner.*	Coal . .	Deceased was put to work on a small pillar in a pillar cutting area about half an hour previous to the accident. Instead of beginning at the rise side of the pillar as he had been instructed to do, he went, in spite of the protestations of his wife and two other miners, who were working on the next pillar, to the bottom of the pillar to get a loose piece of overhanging coal. Almost immediately the piece, weighing about a ton, fell from a height of about 5 feet and a portion falling on him killed him instantly. Inspection and inquiry made.
59	25th June, 5-30 A.M.	Burragarh Mine, Jharia P. O., Bengal.	Panjab and Bengal Coal Co., Ld.	Bonomali Kora, (*m.*), 30, *Coal-cutter.* Saraboni Korin, (*f.*), 25, *Coal-carrier.*	Coal . .	Whilst cutting side coal, deceased were killed by the fall of a slab of coal, 3′ × 6′ × 1′ 6″, which fell on them from a height of 7½ feet. Inspection and inquiry made. *See Report, page 18.*
60	22nd July, 4 P.M.	Nodiha Mine, Ukhara P. O., Bengal.	Gosta Behari Lall Singh and others.	Bistu Bauri, (*m.*), 40, Ajir Shah, (*m.*), 16, Babulal Sheik, (*m.*), 30, *Sinkers.*	Coal . .	Four men had just gone down to work in the bottom of a pit, which was being converted into an incline, when the side wall collapsed, burying the three deceased and partially burying the fourth man. The latter was rescued but the others were killed. Inspection and inquiry made. *See Report, page 18.*
61	3rd August, 1 P.M.	Ekra Khas Mine, Bansjora P. O., Bengal.	Maharaja M. C. Nandi .	Sukor Rajwar, (*m.*), 40, *Coal-cutter.*	Coal . .	Deceased went beyond a fence into an unused gallery and, whilst robbing a pillar, was killed by the fall of a ton of side coal, measuring 4′ 6″ × 4′ 6″ × 1′ 2″. Inspection and inquiry made. *See Report, page 18.*

62	5th August, 2-30 A.M.	Simlabahal Mine, Jharia P. O., Bengal.	Bhalgora Coal Co., Ld.	Lirfet Bilaspuri, (*m.*), 24, *Coal-cutter.*	Coal	Deceased was cutting coal in a gallery 10½ feet high, which was being driven through a pillar, when a mass of coal, 7′ high ×3′—1′ wide ×20″ thick, fell away from smooth "joints" in the top 7 feet in the corner of the face. He was killed on the spot. Inspection and inquiry made.
63	8th August, 10 P.M.	Bhowra Mine, Jamadoba P. O., Bengal.	Eastern Coal Co., Ld.	Jitto Gorai, (*m.*), 40, *Miner.*	Coal	Deceased was working in the lower section of the seam when a triangular mass of coal, 38′×15′×22′ high, fell from the corner of a pillar in the upper section workings. The coal partition between the two workings was broken through and deceased was overwhelmed and died from suffocation, whilst efforts to rescue him were in progress. About 100 tons of coal fell. Inspection and inquiry made.
64	15th August, 7-30 A.M.	Lower Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Ramu Gashi, (*m.*), 27, Hagari Koch, (*m.*), 40, *Miners.* Siki Tamli, (*f.*), 20, *Coal-carrier,*	Coal	Whilst deceased were at work in a "chamber," 62′ long ×41′ wide × 14′ high, a mass of some 40 tons of coal fell away from the higher side and buried them. They were killed instantly. Inspection and inquiry made.
65	25th August, 6 P.M.	Panchgatchia Mine, Sitarampur P. O., Bengal.	Lutchipur Coal Co., Ld.	Fagu Manjhi, (*m.*), 35, *Miner.*	Coal	Deceased was cutting away the corner of a pillar that he had previously undercut, when it came away from a "slip." In stepping back to avoid being struck he fell over a heap of coal he had stacked immediately behind him and received a few abrasions. He died from shock seven hours later. Inspection and inquiry made. *See Report, page 18.*
66	15th September, 4-30 P.M.	Tharghatia Mine, Ganwan P. O., Bengal.	Johur Mull and Sundur Mull.	Thanu Gope, (*m.*), 14, *Coolie.*	Mica	Deceased was one of a line of men passing up earth from one to the other. A piece of the side of the quarry weighing about 10 tons, fell upon him and killed him.
67	24th September, 7 A.M.	Lodna Mine, Jharia P. O., Bengal.	Lodna Colliery Co., Ld.	Jibia Rajwarin, (*f.*), 26, *Coal-carrier.*	Coal	A miner was illegally robbing coal in an old gallery which was fenced off, when about a ton of coal, measuring 7′×4′×1′, fell from the corner of a pillar and killed deceased who carried coal for him. The miner absconded. Inspection and inquiry made.
68	25th September, 11-30 P.M.	Bhuskajuri Mine, Asansol P. O., Bengal.	Bhuskajuri Coal Co., Ld.	Jugal Bauri, (*m.*), 26, *Miner.* Chikonta Bauri, (*m.*), 13, *Carrier.*	Coal	The elder of the two deceased was told to cut floor coal. It was evident that he had left this work and commenced to cut away a corner of a pillar a few feet away. A fall chiefly of side coal, but partly of roof coal, of about 7 cwt., fell from a height of 12 feet. They were both dead when found. Inspection and inquiry made.
69	26th September, 2-30 P.M.	Jamadoba Mine, Jamadoba P. O., Bengal.	Indian Collieries Syndicate, Ld.	Agni Korin, (*f.*), 24, *Coal-carrier.*	Coal	Deceased was carrying coal for a miner, who was illegally robbing a pillar in an old fenced off gallery, when she was killed by the fall of about a ton of coal from the corner of a pillar. Inspection and inquiry made.
70	12th October, 2-45 P.M.	Sendra Mine, Bansjora P. O., Bengal.	Sendra Coal Co., Ld.	Somnath Kurmi, (*m.*), 40, *Coal-cutter.*	Coal	Deceased was robbing a pillar on a travelling road, when a mass of coal, 10′ long ×5′ high ×2′ thick, weighing about 3 tons, fell from the side upon him. He died six days later. Inspection and inquiry made. *See Report, page 19.*
71	17th October, 11-30 P.M.	Aldih Mine, Sitarampur P. O., Bengal.	Aldih Coal Co., Ld.	Boni Baurin, (*f.*), 50, *Coal-carrier.*	Coal	Deceased was loading coal which had been robbed from the side of a pillar, when a slab of coal, measuring 4′×2′×2′, and weighing about half a ton, fell from the side. She was knocked down and received internal injuries from which she died a few hours later. Inspection and inquiry made.
72	9th November, 4 A.M.	Sitalpur Mine, Dishargarh P. O., Bengal.	Bengal Coal Co., Ld.	Turi Majhain, (*f.*), 21, *Coal-carrier.*	Coal	A piece of coal, measuring 20½′ long ×7′ high ×2″ tapering to 3″ thick, fell from the side of a pillar, as deceased was carrying coal past it. "Weighting" was heard by the husband, who was near at hand, and he shouted a warning to her, but she was unable to get clear in time and was knocked down. She died immediately on arrival at the surface. Inspection and inquiry made.

Fatal Accidents, 1911—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*contd.*			
			(*b*) **Falls of Sides**—*concld.*			
73	18th November, 4 P.M.	Kurhurbari Mine, Giridih P. O., Bengal.	East Indian Railway Co.	Kinu Meah, (*m.*), 18, *Coal-cutter.*	Coal	A piece of coal, measuring 20′×6½′×2′ thick, fell from the side of a pillar, situated at the edge of a large goaf, and entrapped deceased, as he was trying to reach a place of safety. He died two and a half hours later from shock and concussion of the brain. Inspection and inquiry made.
74	24th November, 5 A.M.	Tetturia Mine, Katrasgarh P. O., Bengal.	New Tetturia Coal Co., Ld.	Nuna Manjhi, (*m.*), 40, *Miner.*	Coal	Deceased went through a fence and began to rob coal from a pillar. A mass of coal, 11′ long by 10′ high by 18″ thick, fell from the side and killed him on the spot. Inspection and inquiry made.
75	24th November, 8 P.M.	Bhulanbarari Mine, Jharia P. O., Bengal.	Bhulanbarari Coal Co., Ld.	Minu Chamar, (*m.*), 30, *Coal-cutter.*	Coal	Deceased went into an old gallery and began to rob coal from the corner of a pillar. A slab of coal, about 3′×2′×1″ thick, fell on his head from a height of 8 feet. He sustained an injury to his neck and died some hours later. Inspection and inquiry made. *See Report, page 19.*
76	28th November, 5 P.M.	Parsatari Mine, Fatehpur P. O., Bengal.	Ram Krishna Tewari	Ancha Mushar, (*m.*), 20, *Miner.* Chetia Gopin, (*f.*), 16, *Coolie.*	Mica	A pane of decomposed pegmatite, measuring 8 feet square by 12 inches thick, became detached from the side of an open excavation 18 feet high and fell upon several persons, who were working below. The two deceased were completely buried and, before they could be extricated, were smothered. Inspection and inquiry made. *See Report, page 19.*
77	27th December, 5-30 P.M.	Dharmaband Mine, Katrasgarh P. O., Bengal.	H. A. Pringle	Charga Manjhi, (*m.*), 35, *Coal-cutter.*	Coal	After the other coolies had left the mine, deceased remained behind and attempted to cut coal in a place away from his working place, against orders. A stone, 3′×3′×2′ 6″ thick, suddenly fell and killed him on the spot. Inspection and inquiry made.
78	28th December, 3 A.M.	Kusunda Mine, Kusunda P. O., Bengal.	Kusunda and Nayadi Collieries, Ld.	Munhar Rai, (*m.*), 35, *Coal-cutter.*	Coal	Deceased was helping to get coal from a pillar. Another miner began to rob the opposite pillar and, while doing so, caused a mass of coal, 12′ to 6′ long by 7′ high by 3′ thick, to fall from a slip upon deceased, who was loading a basket with coal, killing him on the spot. Inspection and inquiry made.
			IN SHAFTS—(*13 deaths*).			
			Whilst ascending and descending by machinery—(*1 death*).			
79	7th May, 10 P.M.	Jamgram Mine, Panuria P. O., Bengal.	Barakar Coal Co., Ld.	Madhu Rai, (*m.*), 30, *Miner.*	Coal	Deceased fell out of the sinking bucket shortly after leaving the bottom, to ride up a pit 432′ deep. There is not sufficient evidence to prove the cause, but it is supposed the banksman did not give the signal "men riding" to the winding engine khalassi and the latter raised the bucket sharply, giving it a jerk, which threw deceased out. Inspection and inquiry made.

			Falling into the shafts from the surface—(*1 death*).			
80	22nd April, 12-45 P.M.	Budruchak Mine, Sijua P. O., Bengal.	Budruchak Coal Mining Co., Ld.	Charan Koiri, (*m.*), 24, *Munshi.*	Coal	Deceased by some unknown means fell down a fenced shaft, 188 feet deep, and died shortly after he was brought to the surface. Inspection and inquiry made.
			Falling from part of the way down—(*2 deaths*).			
81	9th May, 8 P.M.	Gladstone Mine, Mohulia P. O., Bengal.	Cape Copper Co., Ld.	Mongla, (*m.*), 16, *Drill boy.*	Copper	Deceased was taking a message from No. 2 to No. 1 level and, slipping on a ladder, fell and fractured his skull. No one actually saw him fall. Inspection and inquiry made.
82	18th June, 9-30 A.M.	Sijua Mine, Sijua P. O., Bengal.	Sijua Coal Co., Ld.	Jitu Manjhi, (*m.*), 35, *Coal-cutter.*	Coal	Deceased was supposed to have been pillar robbing in old workings and to have put out his lamp to escape detection. He crossed a substantial rail fence and fell down a staple shaft, 22 feet deep, sustaining injuries from which he died two days later. Inspection and inquiry made.
			Things falling from the surface—(*3 deaths*).			
83	19th May, 11-30 A.M	Katras Mine, Katrasgarh P. O., Bengal.	Nowagarh Coal Co., Ld.	Hiru Meah, (*m.*), 27, *Pump khalassi.*	Coal	Deceased was standing on a pump platform and was struck on the head by a brick, which fell from the walling at the top of the shaft. The brick was dislodged by coolies, who were attempting to pull up a rope ladder hanging down the wall of the shaft. Inspection and inquiry made.
84	6th July, 12-15 A.M.	Saltore Mine, Dishargarh P. O., Bengal.	Saltore Coal Co., Ld.	Mati Lal Roy, (*m.*), 29, *Fitter mistri.* Tenia Kahar, (*m.*), 35, *Pump khalassi.*	Coal	While the two deceased were attending to a sinking pump at a depth of 487 feet, the girders supporting the pump at the surface buckled and partially demolished the brickwork in which they were set. Some of the brick work fell down the shaft and struck the men, killing one outright and injuring the other so badly that he died two days later. Inspection and inquiry made. *See Report, page 20.*
			Things falling from part of the way down—(*3 deaths*).			
85	9th January, 1 A.M.	Titulmuri Mine, Sijua P. O., Bengal.	Titulmuri Coal Co., Ld.	Budhan Rai, (*m.*), 28, *Miner.*	Coal	Deceased was loading a bucket with coal in the shaft, when he was struck by a piece of stone, weighing about 2 lbs., which fell from the side of the shaft. He was killed instantaneously. Inspection and inquiry made.
86	13th January, 7 A.M.	Kurkend Mine, Kusunda P. O., Bengal.	Central Kurkend Coal Co., Ld.	Sidani Malla, (*m.*), 22, *Pump khalassi.*	Coal	Three ranges of steam and water pipes were partially supported in a shaft by steel girders carried in hitches in the shaft walls and built in with brickwork. At the bottom of the shaft a pump was suspended. Owing to vibration set up in the pipes by the working of the pump and to the expansion of the pipes, when under steam, the brickwork became loose and a brick fell down the shaft, whilst deceased and another man were engaged in attending to the pump. He was struck on the head and killed on the spot. Inspection and inquiry made. *See Report, page 21.*
87	9th April, 8 P.M.	South Kustore Mine, Kustore P. O., Bengal.	Raniganj Coal Association, Ld.	Amir Meah, (*m.*), 35, *Stone-cutter.*	Coal	While deceased was at work at the bottom of the shaft, a stone fell from somewhere in the shaft and broke his skull. He died shortly after being brought to the surface. The exact point in the shaft from which the stone fell could not be ascertained, nor could its size, as it was not identified. Inspection and inquiry made.

Fatal Accidents, 1911—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			IN SHAFTS—*concld.*			
			Miscellaneous—(*3 deaths*).			
88	30th April, 5-30 A.M.	Loyabad Mine, Bansjora P. O., Bengal.	Barakar Coal Co., Ld.	Mohar Chamar, (*m.*), 30, *Coal-cutter.*	Coal	Owing to a mistake by the surface hookman the cage was raised from the bottom, whilst men were lifting a derailed tub in the cage. The tub fell out upon the men and deceased was so severely injured that he died twelve days afterwards. Inspection and inquiry made.
89	18th May, 12 A.M.	Gladstone Mine, Mohulia P. O., Bengal.	Cape Copper Co., Ld.	Satrughan, (*m.*), 26, *Underground coolie.*	Copper	Deceased was seated on the skip filling it. While thus engaged, the signal to hoist was given by some unauthorized person and he was crushed between the skip and the hanging wall and killed. Inspection and inquiry made.
90	29th October, 5 P.M.	Ballarpur Mine, Ballarpur P. O., Central Provinces.	Government of India	Durjun Zuri, (*m.*), 45, *Coolie.*	Coal	Deceased was on a temporary scaffold under one of the cages at the top of a shaft, fixing a guide block, when the cage descended from a height of 3 feet and crushed him so severely that he died six days afterwards. The winding engineman stated he received instructions to lower the cages but the evidence of all on the pit top went to disprove this.
			SUFFOCATION BY GASES—(*2 deaths*).			
91	10th December, 8 A.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Bahadur Kora, (*m.*), 43, *Sirdar.* Mohadew Bauri, (*m.*), 35, *Brick mistri.*	Coal	Whilst engaged in plastering a fire dam, deceased were overcome by a sudden inburst of carbon dioxide, which probably came from old workings through fissures in the coal, and suffocated. Their bodies were recovered that evening. Inspection and inquiry made. *See Report, page 21.*
			BY EXPLOSIVES—(*7 deaths*).			
92	5th January, 7-15 A.M.	North Anantapur Mine, Morriston P. O., Madras.	North Anantapur Gold Mines, Ld.	Nichiyil Naidu, (*m.*), 25, Valan, (*m.*), 30, *Coolies.*	Gold	The blaster had fired seven shots. He noticed that a socket was left where one of the shot holes had been and put a stone over it, warning the workmen not to touch it. Nichiyil Naidu put a jumper into the hole in which some explosive remained. It went off, killing him instantaneously and injuring Valan so severely that he died on the following day. Inspection and inquiry made.
93	20th July, 4-40 P.M.	Pagaye Mine, Tavoy P. O., Burma.	Rangoon Mining Co., Ld.	Law Se, (*m.*), 34, *Miner.*	Wolframite	Three shot holes in an adit had been charged and the charges lit. Deceased imagined all three charges had gone off and entered the adit. He was knocked over by the third charge which went off at that moment. He died from the injuries received thirteen days afterwards.
94	26th September, 1 P.M.	North Anantapur Mine, Morriston P. O., Madras.	North Anantapur Gold Mines, Ld.	Guntumathi Narappa, (*m.*), 25, Siruval Subbrayadu, (*m.*), 28, *Hand jumper coolies.*	Gold	Deceased were drilling a hole in a stope and drilled into either a miss-fired shot or a socket containing blasting gelatine which exploded. Guntumathi Narappa was killed outright and Siruval Subbrayadu died from shock five days later. Inquiry made.

95	19th October, 4 P.M.	Gladstone Mine, Mohulia P. O., Bengal.	Cape Copper Co., Ld.	°Raggie, (*m.*), 22, *Shot-firer.*	Copper	Deceased fired a round of seven shots in a heading; one went off long before the others and afterwards deceased was found lying by the side of the heading 60 feet from the shots with his left hip blown in. He was semi-conscious but died in about an hour. He had been injured by the first shot. There was evidence that he afterwards crawled to where he was found. Inspection and inquiry made.
96	12th November, 4-30 P.M.	Junawani Mine, Ramtek P. O., Central Provinces.	Central India Mining Co., Ld.	Bala, (*m.*), 25, *Mining coolie.*	Manganese	While deceased and another miner were tamping a shot hole, it suddenly exploded injuring both of them. Deceased died from his injuries the following day.
			IRRUPTIONS OF WATER OR FALLING INTO WATER—(*1 death*).			
97	24th May, 3 P.M.	Rocklands Mine, Podulkur P. O., Madras.	R. V. Venkata Subbiah Iyer.	Badugu Chinna Polu, (*f.*), 10, *Mica kamin.*	Mica	Deceased was found drowned in 12 feet of water in a quarry, which was temporarily closed, when all the other coolies had gone to a neighbouring mine to be paid. It is surmised she went to drink and fell in and was drowned. Inspection and inquiry made.
			HAULAGE—(*19 deaths*).			
98	12th January, 10 P.M.	New Tetturia Mine, Katrasgarh P. O., Bengal.	New Tetturia Coal Co., Ld.	Fujdar Numia, (*m.*), 30, *Tub-checker.*	Coal	While walking up an incline deceased was overtaken and run over by a train of tubs, which was being hauled from the workings. Inspection and inquiry made.
99	13th January, 2-15 P.M.	South Kustore Mine, Kustore P. O., Bengal.	Raniganj Coal Association, Ld.	Gangaram Gonesh Chamar, (*m.*), 28, *Coal-cutter.*	Coal	Deceased was killed by a train of tubs, which ran wild from the surface, owing to the carelessness of the hookman. Inspection and inquiry made.
100	17th February, 2 P.M.	East Nudkhurki Mine, Nowagarh P. O., Bengal.	Auckland Coal Co., Ld.	Joti Rowani, (*m.*), 28, *Banksman.*	Coal	Twenty empty tubs were standing on the brow of an incline, with the leading tub spragged. Deceased took out the sprag, gave an order for the tubs to be started and then proceeded down the incline to open the dropgate. Unfortunately the three leading tubs were not coupled to the rest and they ran wild, crushing deceased against the gate. He died next day. Inspection and inquiry made. *See Report, page 22.*
101	7th March, 4 P.M.	Dhundabad Mine, Sitarampur P. O., Bengal.	New Manbhum Coal Co., Ld.	Niria Kole, (*f.*), 22, *Coal-carrier.*	Coal	Deceased was travelling up a road rising 1 in 13 without a light, while a loaded tub, under the control of two men, was descending. Before she could make good her escape the tub crushed her against the side of the road, where the width narrows down at a dyke from 9′ to 4½′. She died almost immediately. Inspection and inquiry made.
102	5th April, 3 A.M.	Dandot Mine, Dandot P. O., Panjab.	North-Western Railway	Saif, (*m.*), 24, *Miner.*	Coal	As four empty tubs were about to be lowered down an incline, the last tub but one became derailed. An attempt to replace it on the rails resulted in the hook between it and the two front tubs coming out. These two tubs ran wild and caught deceased at a distance of 200 feet down the incline. He died in a few hours.
103	6th April, 4-30 P.M.	Borrea Mine, Sitarampur P. O., Bengal.	New Beerbhum Coal Co., Ld.	Mangal Manjhi, (*m.*), 15, *Coal-trammer.*	Coal	A loaded tub crushed out a piece of coal, that had been placed by deceased beneath one of its wheels to hold it on a grade of 1 in 12, and ran wild. He was tramming another tub in front of it and was crushed between the tubs. He died shortly afterwards. Inspection and inquiry made.
104	8th April, 6-30 P.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway	Ram Lal, (*m.*), 34, *Chargeman.*	Coal	While inspecting the winding dip by riding up on the hook and chains in front of a set of full trams, deceased appears to have lost his balance at a change of slope and fallen off, and was killed by being crushed between the trams and the side of the road.

Fatal Accidents, 1911—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			HAULAGE—*concld.*			
105	15th April, 7-30 P.M.	Bhowra Mine, Jamadoba P. O., Bengal.	Eastern Coal Co., Ld.	Fagu Koiri, (*m.*), 40, *Hookman.*	Coal	Deceased was removing a sprag from the wheel of a tub and was caught between this tub and a train of six tubs which was slowly moving to a standstill. He sustained internal injuries from which he died eight hours later. Inspection and inquiry made.
106	28th April, 2 A.M.	Katras Mine, Katrasgarh P. O., Bengal.	Nowagarh Coal Co., Ld.	Juman Meah, (*m.*), 55, *Tub-pusher.*	Coal	Deceased was pushing an empty tub up a slope on the surface, when a loaded tub was allowed to run uncontrolled from the siding. A collision occurred and he was knocked down, receiving injuries from which he died fourteen hours later. Inspection and inquiry made.
107	13th May, 6-30 A.M.	Kendwadih Mine, Kusunda P. O., Bengal.	East Indian Coal Co., Ld.	Bisun Singh, (*m.*), 30, *Peon.*	Coal	Deceased was found dead beneath a train of derailed coal tubs, on which it is probable he had been riding, against general orders. Inspection and inquiry made.
108	3rd June, 6 P.M.	Khas Jharia Mine, Jharia P. O., Bengal.	Khas Jharia Coal Co.	Dasarath Singh, (*m.*), 30, *Underground hookman.*	Coal	Owing to the breakage of a rope capping, five loaded tubs ran wild on a dip haulage road. Deceased was run over and killed on the spot. Inspection and inquiry made. *See Report, page 22.*
109	20th June, 3 P.M.	Jamadoba Mine, Jamadoba P. O., Bengal.	Indian Collieries Syndicate, Ld.	Bishu Musahar, (*m.*), 27, *Bottom hookman.*	Coal	A derailment occurred on a road dipping 1 in 9 and worked by endless haulage. Whilst the derailed tub was being lifted on to the rails, the haulage was restarted, owing to the giving of an unauthorised signal by some person unknown. Another tub bumped up against the derailed tub and the impact caused its clip to open and release the tub which ran wild. Deceased was knocked down and killed by the runaway tub at a point 200 feet further down the slope. Inspection and inquiry made.
110	4th July, 10-30 P.M.	Bhowra Mine, Jamadoba P. O., Bengal.	Eastern Coal Co., Ld.	Kartik Singh, (*m.*), 40, *Hookman.*	Coal	Deceased was knocked down by a train of tubs which ran wild owing to the breakage of a drawbar. He died from injuries received eighteen hours later. Inspection and inquiry made.
111	21st July, 12 noon.	Kodur Mine, Chipurupalli P. O., Madras.	Vizianagram Mining Co., Ld.	Kanama, (*f.*), 15, *Coolie.*	Manganese	A set of six loaded tubs had been drawn up an incline and the couplings had been undone. Owing to the carelessness of the incline attendant in not pulling over safety stops, a loaded tub ran down the incline and jumping the buffer stop at the bottom fell about 100 feet away. Deceased was either struck by the tub or died of shock brought on by fright. The doctor said he examined her but could find no marks. Inspection and inquiry made. *See Report, page 23.*

112	4th August, 7-30 P.M.	Raniganj Mine, Raniganj P. O., Bengal.	Bengal Coal Co., Ld.	Umesh Bauri, (*m.*), 18, *Underground trammer.*	Coal		Deceased was pushing a loaded tub, which was spragged, down an inclined plane, when he was run into from behind by another tub and had one of his legs caught between the buffers and broken. Evidence is not clear as to whether the other tub ran wild from the top of the incline or was pushed by another trammer. There was no stop-block at the top of the inclined plane. He died two days later. Inspection and inquiry made.
113	31st August, 9-20 P.M.	Lakorka Mine, Katrasgarh P. O., Bengal.	Lakorka Coal Co., Ld.	Bhudeb Charan Mukherji, (*m.*), 27, *Pit sircar.*	Coal		Whilst a train of 15 tubs was being started from the top of the haulage slope, a coupling hook fell off and four tubs ran wild. Deceased, who had just entered the arching on his way underground, was knocked down and sustained injuries from which he died within two hours. Inspection and inquiry made. *See Report, page 23.*
114	7th October, 8-30 A.M.	Chowrasi Mine, Dishargarh P. O., Bengal.	Equitable Coal Co., Ld.	Budhu Manjhi, (*m.*), 25, *Coal-cutter.*	Coal		Deceased was killed by a train of five tubs which, owing to a missed coupling, ran wild from the top of a haulage slope. The hookman responsible for the coupling together of the tubs absconded immediately. Inspection and inquiry made.
115	15th October, 2-30 A.M.	Panchgatchia Mine, Sitarampur P. O., Bengal.	Lutchipur Coal Co., Ld.	Chamari Gwala, (*m.*), 50, *Hookman.*	Coal		Whilst a train of five empty tubs was being lowered on a haulage incline, the front tub became uncoupled and ran wild to the bottom, where deceased was run over and received injuries from which he died five hours later. Inspection and inquiry made. *See Report, page 23.*
116	27th October, 6-15 P.M.	Sendra Mine, Bansjora P. O., Bengal.	Sendra Coal Co., Ld.	Amrit Chamar, (*m.*), 37, *Underground hookman.*	Coal		Owing to excess of slack rope being paid out, a train of seven empty tubs ran wild for a distance of some 50 feet down a grade of 1 in 4·3. The jerk thus caused broke the rope. The released train ran into the mine. Deceased was run over and killed 200 feet further down the slope. The banksman had tied up the wire actuating the emergency stop-block and was directly responsible for the fatality. He absconded immediately. Inspection and inquiry made.
			SUNDRIES UNDERGROUND—(*5 deaths*).				
117	23rd February, 4-0 A.M.	North Anantapur Mine, Morriston P. O., Madras.	North Anantapur Gold Mines, Ld.	Chemea Pillai, (*m.*), 20, *Hand jumper coolie.*	Gold		Deceased and three other men were engaged in driving a rise to connect with a winze, working on a wooden staging 15 feet from the ground. One of the timbers supporting the staging broke, it is surmised, by ground falling on top of it, and the staging was thrown to the ground and deceased died from injuries thus received. Inspection and inquiry made.
118	6th April, 1 P.M.	Mayo Mine, Khewra P. O., Panjab.	Govt. of India	Rakhi, (*f.*), 45, *Carrier.*	Salt		Deceased was on her way out of the mine and had allowed her light to go out. In order to get to the travelling way she had to cross the tram line, and, as she was doing so, she was knocked down by a salt truck which was coming out. She died that night.
119	15th July, 0-20 A.M.	Dhundabad Mine, Sitarampur P. O., Bengal.	New Manbhum Coal Co., Ld.	Hira Manjhain, (*f.*), 23, *Coal-carrier.*	Coal		An air blast produced by an extensive fall of roof dislodged a rail, 11′ 6″ long and weighing 52 lbs., which was supporting the shaft bottom protection sheets and hurled it a distance of 32 feet. In its flight it struck the deceased on the head and killed her outright. Inspection and inquiry made. *See Report, page 23.*
120	1st December, 3 A.M.	Kurkend Mine, Kusunda P. O., Bengal.	Central Kurkend Coal Co., Ld.	Dassia Turin, (*f.*), 17, *Coal-carrier.*	Coal		Whilst carrying a heavy basket full of coal, deceased tripped and fell on a tram line. She sustained an injury to the spine and died a few hours later. Inspection and inquiry made.
121	5th December, 7 A.M.	Ranidih Mine, Mohoda P. O., Bengal.	East Indian Mining Syndicate.	Sukri Kabar, (*f.*), 13, *Coolie.*	Coal		With the object of killing vermin deceased, when underground, poured kerosine oil from a lighted lamp on her head. Her hair caught fire and she was so severely burnt that she died on the following day. Inspection and inquiry made.

Fatal Accidents, 1911—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			ABOVE GROUND.			
			By surface machinery—(*3 deaths*).			
122	20th April, 9-50 A.M.	Sanctoria Mine, Dishargarh P. O., Bengal.	Bengal Coal Co., Ld.	Madan Khan, (*m.*), 62, *Engine cleaner.*	Coal	Although warned by the engineman to desist, deceased persisted in continuing to clean the engine after it had been started. He was caught by the indicator crank and jammed in the engine, being killed instantaneously. Inspection and inquiry made.
123	8th June, 8 A.M.	Jamadoba Mine, Jamadoba P. O., Bengal.	Indian Collieries Syndicate, Ld.	Hari Meah, (*m.*), 25, *Tub-runner.*	Coal	Deceased was one of a number of men who were attempting to reverse the direction of travel of an endless haulage rope by pulling at the fly wheel of the engine. Steam was shut off at the time. After turning the fly wheel about half way round the weight of the tubs on the rope caused it to return with a jerk to its original position. Deceased was thrown into the gearing and received injuries from which he died two days later. Inspection and inquiry made.
124	21st June, 8-30 A.M.	Bhagaband Mine, Jharia P. O., Bengal.	Borrea Coal Co., Ld.	Deo Narayan Lala, (*m.*), 24, *Tub-checker.*	Coal	Whilst sheltering from rain in a surface hauling engine house, deceased's clothes were caught in the gearing and he was dragged in between the spur wheel and pinion. Killed instantaneously. Inspection and inquiry made.
			On surface railways and tramways belonging to the mine— (*7 deaths*).			
125	1st February, 8-30 P.M.	Bhuskajuri Mine, Asansol P. O., Bengal.	Bhuskajuri Coal Co., Ld.	Jugal Bhuia, (*m.*), 14, *Tramming coolie.*	Coal	A loaded tub was being emptied by deceased on a trestle tramway, 9 feet high, when another tub collided with it, with the result that deceased was pitched on to the ground below and, alighting on his head, sustained compression of the brain. He died seven days later. Inspection and inquiry made.
126	9th February, 1 P.M.	Craddock Mine, Pench Valley P. O., Central Provinces.	Central Pench Valley Coal Co., Ld.	Rangu Gond, (*m.*), 45, *Coolie.*	Coal	Deceased was riding, without orders, on a tub frame, down a slight gradient, and collided with a tub loaded with rails and sleepers, his head striking the end of a rail on the loaded tub. He was killed instantly.
127	16th March, 7 P.M.	Kochkurie Mine, Ramtek P. O., Central Provinces.	Bansilal Ambirchand Mining Syndicate.	Govind Ram, (*m.*), 45, *Cashier.*	Manganese	Deceased was trollying at dusk on the tram line and the trolly he was on ran into or was run into by four empty ore tubs coming the other way. He had one of his legs cut off and died about two hours afterwards from shock. Inspection and inquiry made. *See Report, page 24.*
128	31st July, 7-30 A.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Bodri Gwala, (*m.*), 40, *Sweeper.*	Coal	Whilst travelling down the incline on the surface, deceased, who was partly blind, deaf, and of unsound mind, was run over and killed by a train of coal tubs. Inspection and inquiry made.

129	3rd September, 10 A.M.	Kodur Mine, Chipurupalli P. O., Madras.	Vizianagram Mining Co., Ld.	Lenka Bungari, (*m.*), 50, *Coolie.*	Manganese	The coupling between the second and last tubs of a set of three unhooked and the front two tubs went on ahead. Deceased had one foot on the second tub and one on the last one and when they parted he fell between them and was run over. One of his ankles was badly crushed. The foot was amputated the next day, but he died after the operation. Inspection and inquiry made.
130	8th November, 2-30 A.M.	Bagdigi Mine, Jharia P. O., Bengal.	C. J. Smith . . .	Jhari Mahato, (*m.*), 22, *Surface-trammer.*	Coal .	Deceased was sleeping about 3 feet away from a tram line on the surface, at night, when a loaded tub derailed and fell upon him killing him on the spot. Inspection and inquiry made.
131	21st November, 9-15 A.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway .	Mahomed Aswar, (*m.*), 18, *Fireman.*	Coal .	As deceased was walking a few feet in front of a colliery locomotive sprinkling dust on the lines because they were slippery, he slipped and fell, and the locomotive passed over him. He died in a few minutes.
			Miscellaneous on surface—(*6 deaths.*)			
132	14th January, 9 P.M.	Khuldiha Mine, Giridih P. O., Bengal.	Bengal Coal Co., Ld. .	Gondo Gope, (*m.*), 40, *Winding engine khalassi.*	Coal .	Deceased's body was found in a boiler feed water tank. His clothes were on the edge and it is presumed that he fell in while washing himself. The tank was fenced by a single wire. Inspection and inquiry made.
133	15th January, 6 A.M.	Bhuggutdih Mine, Dhanbaid P. O., Bengal.	Bengal-Nagpur Coal Co., Ld.	Bisna Burhi, (*m.*), 20, *Depôt coolie.*	Coal .	Deceased was found dead floating in a boiler feed water tank, 12′ 0″ × 8′ 6″, which had 7 feet of water in it. He had probably climbed over the fence surrounding it on the previous (Sunday) evening to bathe. Inspection and inquiry made.
134	17th January, 3 P.M.	Hiria Mine, Kodarma P. O., Bengal.	S. K. and K. K. Sahana .	Bhatu Meah, (*m.*), 18, *Splitter.*	Mica .	Deceased and three other men had made a hole in a mica waste heap about 5 feet deep. The side collapsed and buried them. The three others were rescued alive, but deceased died from suffocation.
135	1st May, 9 P.M.	Kurkend Mine, Kusunda P. O., Bengal.	Central Kurkend Coal Co., Ld.	Obad Bawrin, (*f.*), 40, *Coal-carrier.*	Coal .	Deceased was filling her lighted lamp with kerosine oil from a bottle, when the bottle caught fire. The fire spread to her clothes and she was badly burnt, dying two days afterwards. Inspection and inquiry made.
136	6th July, 8-30 A.M.	South Kujama Mine, Jharia P. O., Bengal.	Bagdiggi-Kujama Collieries Co., Ld.	Punit Bhuia, (*m.*), 55, *Surface labourer.*	Coal .	Deceased was struck on the neck by a falling ladder, and expired six hours later. Inspection and inquiry made.
137	1st December, 4-30 P.M.	Kabulgitti Mine, Kabulgitti P. O., Bombay.	Kabulgitti Gold Mines .	Beldhadi Sankia, (*m.*), 30, *Coolie.*	Gold .	As the timber boomstay beam of a head gear was being lowered, a snatch block broke, and the beam swung round and fell, knocking down deceased who was running away at the time. He died seventeen hours afterwards.

Fatal Accidents, 1911—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Reason for exclusion.	Cause of accident and remarks.
			DEATHS NOT INCLUDED IN THE STATISTICS—(*23 deaths*).				
1	6th January, 3-45 P.M.	Pathargada Mine, Bhujudih P. O., Bengal.	Kohinoor Coal Co., Ld.	Ramgutti Kurmin, (*f.*), 4.	Coal	Not employed	Deceased was alone in a hut, which caught fire, and was burned to death. Inspection and inquiry made.
2	19th January, 9 A.M.	Vanora Khas Mine, Charanpur P. O., Bengal.	Maharaja M. C. Nandi	Paloan Koiri, (*m.*), 3.	Coal	Not employed	While loaded tubs were being shunted on a surface tram line, situated within 20 feet of some dwellings, the deceased strayed upon the line and was run over. Inspection and inquiry made.
3	28th January, 4 P.M.	Jotejanaki Mine, Chowkidanga P. O., Bengal.	Banerji Santan	Nanda Bauri, (*m.*), 55, *Colliery contractor's thatcher.*	Coal	Not employed at mine.	Deceased, with another man, was crossing a bridge over which trams run, from the pit. They had been engaged in thatching some coolies' huts and were returning from work. While on the bridge, thinking they heard a tram coming, they ran, and deceased tripped and fell over the end of the bridge into the jore below and broke one of his legs just above the ankle. He died a month later. Inspection and inquiry made.
4	3rd February, 1-55 A.M.	Tumsar Road Tramway, Bhandara P. O., Central Provinces.	Central India Mining Co., Ld.	Haria Chamar, (*m.*), 22, *Tub cleaner.*	Manganese	Not a mine tramway.	Deceased was sleeping near a coal fire on a surface railway. His clothes caught fire and he was burnt so severely that he died three days later.
5	1st March, 10 A.M.	Shivrajpur Mine, Shivrajpur P. O., Bombay.	Shivrajpur Syndicate, Ld.	Sunder Rama, (*f.*), 1½.	Manganese	Not employed	The deceased child crawled away unnoticed from the place where she was put down by her mother and which was about 25 yards off and went to sleep with her right arm and leg over the rail. A full tub pushed by the father and uncle of deceased ran over her and she had her arm and leg cut off dying from shock ten days after. Inspection and inquiry made.
6	18th March, 6 A.M.	Kenda Mine, Chowkidanga P. O., Bengal.	Fulchand Marwari	Mukhu Majhain, (*f.*), 17, *Underground loading kamin.*	Coal	Suicide	Deceased had been off work for 3 or 4 days complaining of feeling ill in her head. She went out of her house when her husband went to the bazar and threw herself into a pit. She was seen and pulled out, but died. Inspection and inquiry made.
7	19th March, Unknown.	Jamuria Mine, Nandi P. O., Bengal.	Equitable Coal Co., Ld.	Fagu Manjhi, (*m.*), 48.	Coal	Not employed	Deceased was found drowned in a boiler feed water tank, 40 feet square and 12 feet high. There was 6 feet of water in the tank, which was properly fenced. It is presumed he fell in in a fit. Inspection and inquiry made.
8	19th March, 10 A.M.	Borrea Mine, Sitarampur P. O., Bengal.	New Beerbhum Coal Co., Ld.	Okhoy Gope, (*m.*), 40.	Coal	Not employed	According to the evidence of his nephew, deceased had been mad for about a year. He ran out of the house and, when running past an abandoned pit, 35 feet deep, which was unfenced, he fell into it. Whether by accident or design is unknown. He was dead when got out. Inspection and inquiry made. *See Report, page 24.*

9	27th March, 5 A.M.	Salanpur Mine, Sitarampur P. O., Bengal.	Borrea Coal Co., Ld.	Piari Marwarin, (*f.*), 30.	Coal	Not employed	Deceased, while suffering great pain, deliberately climbed the protection wall of an old shaft and jumped into about 60 feet of water. Her body was recovered three days later. Inspection and inquiry made.
10	16th April, 7-30 P.M.	Kendwadih Mine, Kusunda P. O., Bengal.	East Indian Coal Co., Ld.	Bhogia Dosadhin, (*f.*), 30.	Coal	Not a mine accident.	Deceased died from burns received while endeavouring to rescue property from a burning hut. Inspection and inquiry made.
11	—May,	Jairamdanga Mine, Asansol P. O., Bengal.	New Beerbhum Coal Co., Ld.	Unknown, (*f.*), 45.	Coal	Not employed.	Deceased was found at the bottom of No. 6 pit, which is disused. She had quarrelled with her son and it was presumed afterwards committed suicide by throwing herself down the shaft. The shaft was well fenced. Inspection and inquiry made.
12	5th June, 8 A.M.	Kujama Mine, Jharia P. O., Bengal.	L. H. Dass & Co.	Dadia Nuth, (*m.*), 33, *Pump khalassi.*	Coal	Not a mine accident.	Deceased was lowered in a basket by a rope to the bottom of an old well, 71 feet deep, for the purpose of examining it. After remaining a few moments he was hauled up again, but fell from the rope when he had been drawn about half way up. He was rescued, but died shortly afterwards from injuries due to the fall. Two days later a lamp was extinguished when lowered to a depth of 26 feet. From this it is evident that deceased was overcome by breathing air containing an excess of carbonic acid gas. Inspection and inquiry made.
13	22nd June, 3 P.M.	Kujama Mine, Jharia P. O., Bengal.	G. K. Dosa & Co.	Bhagbania Bhuia, (*f.*), 4.	Coal	Not employed	Deceased was blind and partly deaf, and, falling into a small stream near the coolie lines, she was drowned. Inspection and inquiry made.
14	4th July, 6 A.M.	Egarcoor Mine, Chirkunda P. O., Bengal.	Umed Bhai Patel	Radha Merchi, (*m.*), 1	Coal	Not employed	Following the extraction of pillars under a thin cover, about 1,600 square feet of surface, upon which a hut was standing, subsided to a depth of 7 feet and reduced the hut to ruins. Seven persons were extricated from the ruins, one of whom, a child, aged 1 year, was dead. Two others were injured. Inspection and inquiry made. *See Report, page 24.*
15	6th July, Unknown.	Katras Mine, Katrasgarh P. O., Bengal.	Nowagarh Coal Co., Ld.	Gayaram Dhobi, (*m.*), 36.	Coal	Dhobie	Whilst in a state of intoxication, he fell into an old shaft fenced by a wall only 30 inches high. Inspection and inquiry made.
16	19th August, 3 P.M.	Bagdiggi Mine, Jharia P. O., Bengal.	C. J. Smith	Ragunath Kahar, (*m.*), 26, *Domestic servant.*	Coal	Not employed on the mine. Suicide.	Deceased had committed a theft and, whilst attempting to evade pursuit, jumped into an old quarry and was drowned. Inspection and inquiry made.
17	21st August, 12 Noon.	Kusunda Mine, Kusunda P. O., Bengal.	Kusunda and Nayadi Collieries, Ld.	Bidhu Muchin, (*f.*), 20.	Coal	Not employed	Deceased was found drowned in a boiler feed water tank which was properly fenced. Inspection and inquiry made.
18	5th September, 12-30 P.M.	Sanctoria Mine, Dishargarh P. O., Bengal.	Bengal Coal Co., Ld.	Mungri Dosadhin, (*f.*), 37.	Coal	Not employed	In the absence of any eye-witnesses deceased fell into a boiler feed water tank containing water 11′ 6″ deep. It was evident that she had climbed through the protection fence to fetch drinking water. Inspection and inquiry made.
19	6th October, 9 A.M.	Rajhara Mine, Rajhara P. O., Bengal.	Bengal Coal Co., Ld.	Harakmonia Koirin Mahata, (*f.*), 70.	Coal	Not employed	Deceased was walking along a surface tram line and was run over by the first of six empty tubs which were being pushed by a locomotive towards the pits. She died on the way to the hospital.

Fatal Accidents, 1911—*concld.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Reason for exclusion.	Cause of accident and remarks.
			DEATHS NOT INCLUDED IN THE STATISTICS—*concld.*				
20	21st October, 11 A.M.	Alkusa Mine, Kustore P. O., Bengal.	Raniganj Coal Association, Ld.	Pattiya Dosani, (*f.*), 38, *Coal-loader.*	Coal	Not a mine accident.	Whilst wagons were being hand shunted, deceased attempted to cross the line and was crushed between two wagons, sustaining internal injuries from which she died five hours later. Inspection and inquiry made.
21	28th October, 12-30 P.M.	Benahir Mine, Jharia P. O., Bengal.	Standard Coal Co., Ld.	Gajwa Dosadh, (*m.*), 5	Coal	Not employed	Deceased was run over by a loaded tub which was allowed to run uncontrolled down a slope. He received injuries from which he died on the following day. Inspection and inquiry made.
22	8th December, 2-15 P.M.	West Gopalichak Mine, Kusunda P. O., Bengal.	Gopalichak Coal Co., Ld.	Bundia Musalmani, (*f.*), 13, *Surface labourer.*	Coal	Not a mine accident.	Deceased was drawing water from a well and by some unknown means fell in and was drowned. Inspection and inquiry made.
23	10th December, 12 Noon.	Jamuria Mine, Nandi P. O., Bengal.	Equitable Coal Co., Ld.	Machoea Singh, (*m.*), 33, *Labourer.*	Coal	Not a mine accident.	Deceased with three other men was lifting a double headed rail 18 ft. long, down from a height of 7'-6", when he slipped and the rail fell and, in falling, hit him on the head, fracturing his skull. He died three days afterwards. Inspection and inquiry made.

APPENDIX II—*contd.*

Table No. 2.

Statement of fatal and serious accidents in and about mines regulated by the Indian Mines Act, 1901, during the year 1911.

Province.	District and mineral field.	Total average number of persons employed daily.	Fatal accidents: Number of separate fatal accidents.	Fatal accidents: Number of deaths: Below ground.	Fatal accidents: Number of deaths: Above ground.	Fatal accidents: Number of deaths: Total deaths.	Serious accidents: Number of serious non-fatal accidents.	Serious accidents: Number of persons seriously injured: Below ground.	Serious accidents: Number of persons seriously injured: Above ground.	Serious accidents: Number of persons seriously injured: Total number of persons injured.	Death rate per 1,000 persons employed: Below ground.	Death rate per 1,000 persons employed: Above ground.	Death rate per 1,000 persons employed: Below and above ground.
					A.—COAL.								
Bengal	Hazaribagh: Bokaro-Ramgarh	25	...	...	...	...	...	...	...	...	...	...	...
	Hazaribagh: Giridih	6,899	4	3	1	4	5	4	1	5	·69	·38	·57
	Hazaribagh: Jharia	11	...	...	...	...	...	...	...	...	...	...	...
	Manbhum, Jharia	53,438	60	75	6	81	31	20	11	31	2·22	·30	1·51
	„ Raniganj	4,729	5	6	...	6	5	3	2	5	1·82	...	1·26
	Bankura „	66	...	...	...	...	...	...	...	...	...	...	...
	Birbhum „	21	...	...	...	...	...	...	...	...	...	...	...
	Burdwan „	33,844	23	25	2	27	33	29	6	35	1·10	·17	·79
	Sonthal Parganas, Raniganj	26	...	...	...	...	...	...	...	...	...	...	...
	„ Rajmahal	17	...	...	...	...	...	...	...	...	...	...	...
	Palamau, Daltonganj	662	...	...	...	...	...	...	...	...	...	...	...
	Sambalpur, Hingir-Rampur	245	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	99,983	92	109	9	118	74	56	20	76	1·68	·25	1·18
Central Provinces	Chhindwara, Pench Valley	470	2	1	1	2	...	...	...	...	2·89	8·06	4·25
	Narsinghpur, Mohpani	1,087	1	1	...	1	2	2	...	2	1·48	...	·92
	Chanda, Ballarpur	735	1	1	...	1	1	1	...	1	1·70	...	1·36
	TOTAL	2,292	4	3	1	4	3	3	...	3	1·87	1·45	1·74
Panjab	Jhelum	1,338	4	6	...	6	3	3	...	3	6·87	...	4·48
	Shahpur	35	...	...	...	...	...	...	...	...	...	...	...
	Mianwali	132	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	1,505	4	6	...	6	3	3	...	3	6·41	...	3·98
Eastern Bengal and Assam	Lakhimpur	1,965	10	12	1	13	5	5	...	5	9·90	1·32	6·61
Baluchistan	Sibi, Khost	837	7	6	1	7	3	2	1	3	11·38	3·22	8·36
	Loralai, Loralai	11	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	848	7	6	1	7	3	2	1	3	11·21	3·19	8·25
North-West Frontier Province.	Hazara	5	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (COAL)	106,598	117	136	12	148	88	69	21	90	1·97	·31	1·38

APPENDIX II—*contd.*

Table No. 2—*contd.*

Statement of fatal and serious accidents in and about mines regulated by the Indian Mines Act, 1901, during the year 1911.

Province.	District and mineral field.	Total average number of persons employed daily.	Fatal accidents.				Serious accidents.				Death rate per 1,000 persons employed.		
			Number of separate fatal accidents.	Number of deaths.			Number of serious non-fatal accidents.	Number of persons seriously injured.					
				Below ground.	Above ground.	Total deaths.		Below ground.	Above ground.	Total number of persons injured.	Below ground.	Above ground.	Below and above ground.
			B.—MICA.										
Bengal	Monghyr	307	...	...	...	...	...	...	...	...	...	...	...
	Hazaribagh	10,109	5	8	1	9	2	8	...	8	1·40	·22	·89
	Gaya	1,379	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	11,795	5	8	1	9	2	8	...	8	1·18	·19	·76
Madras	Nellore	3,498	1	1	...	1	...	...	...	...	·43	...	·28
	Salem	33	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	3,531	1	1	...	1	...	...	...	...	·42	...	·28
Rajputana	Ajmer-Merwara	248	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (MICA)	15,574	6	9	1	10	2	8	...	8	·97	·15	·64
			C.—MANGANESE.										
Central Provinces	Nagpur	3,593	2	1	1	2	1	...	1	1	·34	1·42	·55
	Bhandara	1,479	...	...	...	...	8	...	8	8	...	...	...
	Balaghat	2,463	...	...	...	...	2	1	1	2	...	...	..
	Chhindwara	133	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	7,668	2	1	1	2	11	1	10	11	·17	·50	·26
Madras	Vizagapatam	2,704	2	1	1	2	...	...	...	...	·47	1·64	·73
Bombay	Panch Mahals	1,512	...	...	...	...	1	1	...	1	...	...	...
	GRAND TOTAL (MANGANESE)	11,884	4	2	2	4	12	2	10	12	·22	·66	·33
			D.—LIMESTONE.										
Central Provinces	Jabalpur-Katni	3,382	1	1	...	1	...	...	...	...	·50	...	·29
Panjab	Hoshiarpur	90	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (LIMESTONE)	3,472	1	1	...	1	...	...	...	...	·49	...	·28
			E.—SALT.										
Panjab	Shahpur	54	...	...	...	...	...	...	..	.	...	...	...
	Jhelum	777	1	1	...	1	13	13	...	13	1·34	...	1·28
	Mianwali	59	...	...	...	...	2	...	2	2	...	...	...
	GRAND TOTAL (SALT)	890	1	1	...	1	15	13	2	5	1·16	...	1·12

APPENDIX II—*contd.*

Table No. 2—*contd.*

Statement of fatal and serious accidents in and about mines regulated by the Indian Mines Act, 1901, during the year 1911.

Province.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS. Number of separate fatal accidents.	FATAL ACCIDENTS. Number of deaths. Below ground.	FATAL ACCIDENTS. Number of deaths. Above ground.	FATAL ACCIDENTS. Total deaths.	SERIOUS ACCIDENTS. Number of serious non-fatal accidents.	SERIOUS ACCIDENTS. Number of persons seriously injured. Below ground.	SERIOUS ACCIDENTS. Number of persons seriously injured. Above ground.	SERIOUS ACCIDENTS. Number of persons seriously injured. Total number of persons injured.	Death rate per 1,000 persons employed. Below ground.	Death rate per 1,000 persons employed. Above ground.	Death rate per 1,000 persons employed. Below and above ground.
					F.—GEMS.								
Burma	Mogok (Rubies, etc.)	1,505	...	...	...	...	2	...	2	2	...	...	...
Madras	Kurnool (Diamonds)	37	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Gems)	1,542	...	...	...	...	2	...	2	2	...	...	...
					G.—SLATE.								
Bengal	Monghyr	220	...	...	...	...	...	...	...	...	...	...	...
Panjab	Kangra	431	...	...	...	...	...	...	...	...	...	...	...
	Gurgaon	170	...	...	...	...	...	...	...	...	...	...	...
	Total	601	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Slate)	821	...	...	...	...	...	...	...	...	...	...	...
					H.—GOLD.								
Bombay	Dharwar	264	1	...	1	1	...	...	...	...	...	3·78	3·78
Madras	Anantapur	1,110	3	5	...	5	2	3	...	3	8·93	...	4·50
	GRAND TOTAL (Gold)	1,374	4	5	1	6	2	3	...	3	8·93	1·22	4·36
					I.—IRON.								
Central Provinces	Jabalpur	40	...	...	...	...	...	...	...	...	...	...	...
Bengal	Singhbhum	1,328	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Iron)	1,368	...	...	...	...	...	...	...	...	...	...	...
					J.—WOLFRAMITE.								
Burma	Tavoy	545	1	1	...	1	...	...	...	...	2·54	...	1·83
	Mergui	...	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Wolframite).	545	1	1	...	1	...	...	...	...	2·54	...	1·83
					K.—MAGNESITE.								
Madras	Salem	327	...	...	...	...	...	...	...	...	...	...	...
					L.—CHROMITE.								
Baluchistan	Quetta-Pishin	9	...	...	...	...	1	1	...	1	...	...	...

APPENDIX II—*contd.*

Table No. 2—*concld.*

Statement of fatal and serious accidents in and about mines regulated by the Indian Mines Act, 1901, during the year 1911.

Province.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS. Number of separate fatal accidents.	FATAL ACCIDENTS. Number of deaths. Below ground.	FATAL ACCIDENTS. Number of deaths. Above ground.	FATAL ACCIDENTS. Number of deaths. Total deaths.	SERIOUS ACCIDENTS. Number of serious non-fatal accidents.	SERIOUS ACCIDENTS. Number of persons seriously injured. Below ground.	SERIOUS ACCIDENTS. Number of persons seriously injured. Above ground.	SERIOUS ACCIDENTS. Number of persons seriously injured. Total number of persons injured.	Death rate per 1,000 persons employed. Below ground.	Death rate per 1,000 persons employed. Above ground.	Death rate per 1,000 persons employed. Below and above ground.
		M.—COPPER ORE.											
Bengal	Singhbhum	1,323	3	3	..	3	1	4	...	4	3·81	...	2·26
		N.—FULLER'S EARTH.											
Central Provinces	Jabalpur	*...	...	...	...	...	...	...	...	...	...	...	...
		O.—CLAY.											
Central Provinces	Jabalpur	101	...	...	...	..	...	...	...	...	...	...	...
		P—GALENA.											
Burma	Mandalay	8	...	...	...	...	...	...	...	...	...	...	...
Madras	Kurnool	21	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Galena)	29	...	...	...	...	...	...	...	...	...	...	...
		Q.—TIN.											
Bengal	Hazaribagh	13	...	...	...	...	...	...	...	...	...	...	...
Burma	Mergui (Maliwan)	60	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Tin)	73	...	...	...	...	...	...	...	...	...	...	...
		R.—STEATITE.											
Central Provinces	Jabalpur	51	...	...	...	...	...	...	...	...	...	...	...
Madras	Kurnool	38	...	...	...	...	1	...	1	1	...	...	...
	GRAND TOTAL (Steatite)	89	...	...	...	...	1	...	1	1	...	...	...
		S.—GRAPHITE.											
Madras	Vizagapatam	25	...	...	...	...	...	...	...	...	...	...	...
		T.—CORUNDUM.											
Madras	Trichinopoly	290	...	...	...	...	...	...	...	...	...	...	...
		U.—SAMARSKITE.											
Madras	Nellore	2	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (All minerals).	146,336	137	158	16	174	124	100	36	136	1·68	·30	1·18

* Figures included with those for limestone.

APPENDIX II—*contd.*

Table No. 3.

Statement of fatal accidents in mines regulated by the Indian Mines Act, 1901, during the year 1911, classified according to the age and sex of the workers.

Mineral.	Province and mineral field.	Number of separate fatal accidents.	Number of deaths.								Total below and above ground.
			Below ground.				Above ground.				
			Adult males.	Adult females.	Children (under 12).	Total.	Adult males.	Adult females.	Children (under 12).	Total.	
Coal	Baluchistan	7	6	...	...	6	1	...	...	1	7
	Bengal — Giridih	4	3	...	...	3	1	...	...	1	4
	Bengal — Jharia	60	60	15	...	75	5	1	...	6	81
	Bengal — Raniganj	28	23	8	...	31	2	...	...	2	33
	Total (Bengal)	92	86	23	...	109	8	1	...	9	118
	Central Provinces	4	2	1	...	3	1	...	...	1	4
	Eastern Bengal and Assam	10	8	4	...	12	1	...	...	1	13
	Panjab	4	6	...	...	6	...	...	...	...	6
	Total Coal	117	108	28	...	136	11	1	...	12	148
Mica	Bengal	5	4	3	1	8	1	...	...	1	9
	Madras	1	...	...	1	1	...	...	...	...	1
	Total Mica	6	4	3	2	9	1	...	...	1	10
Manganese	Central Provinces	2	1	...	...	1	1	...	...	1	2
	Madras	2	...	1	...	1	...	1	...	1	2
	Total Manganese	4	1	1	...	2	1	1	...	2	4
Limestone	Central Provinces	1	1	...	...	1	...	...	...	...	1
Salt	Panjab	1	...	1	...	1	...	...	...	...	1
Gold	Bombay	1	...	...	...	...	1	...	...	1	1
	Madras	3	5	...	...	5	...	...	...	...	5
	Total Gold	4	5	...	...	5	1	...	...	1	6
Wolframite	Burma	1	1	...	...	1	...	...	...	...	1
Copper	Bengal	3	3	...	...	3	...	...	...	...	3
Grand total, all minerals		137	123	33	2	158	14	2	...	16	174

APPENDIX II—*concld.*

Table No. 4.

Statement of fatal accidents in mines regulated by the Indian Mines Act, 1901, during the year 1911, classified according to cause of accident.

Mineral worked.	Number of separate fatal accidents.	Number of persons killed.											Death rate per 1,000 persons employed.		
		Explosions of fire-damp.	Falls of roof.	Falls of side.	In shafts.	By explosives.	Suffocation by gases.	Irruptions of water or falling into water.	Haulage.	Miscellaneous below ground.	Surface.	Total deaths.	Below ground.	Above ground.	Below and above ground.
Coal . . .	117	17	50	35	11	...	2	...	18	3	12	148	1·97	·31	1·38
Mica . . .	6	...	1	7	...	...	...	1	...	...	1	10	·97	·15	·64
Manganese . .	4	...	...	...	...	1	...	...	1	...	2	4	·22	·66	·33
Limestone . .	1	...	...	1	...	...	...	...	...	...	...	1	·49	...	·28
Salt . . .	1	...	...	...	...	...	...	...	...	1	...	1	1·16	...	1·12
Gold . . .	4	...	...	...	...	4	...	..	...	1	1	6	8·93	1·22	4·36
Wolframite . .	1	...	...	...	...	1	...	...	...	...	...	1	2·54	...	1·83
Copper . .	3	...	...	...	2	1	...	...	...	...	...	3	3·81	...	2·26
Total 1911 . .	137	17	51	43	13	7	2	1	19	5	16	174	1·68	·30	1·18
Total preceding year.	117	27	52	32	20	8	...	6	16	9	16	186	1·89	·29	1·29
Difference . .	+20	—10	—1	+11	—7	—1	+2	—5	+3	—4	...	—12	—·21	+·1	—·11

APPENDIX III.

PROSECUTIONS UNDER THE MINES ACT.

Statement of prosecutions instituted under the Indian Mines Act, 1901, during the year 1911.

Province.	District.	Number of prosecutions.	Number of persons prosecuted.	Number convicted.	Numbers of rules and sections of the Act, contravened.	Remarks.
Bengal . .	Manbhum	1	1	1	Section 20, Rules 3 and 7.	
	Do. .	1	1	1	Ditto.	
	Do. .	1	1	1	Section 20, Rule 7.	
	Do. .	1	1	1	Ditto.	
	Burdwan .	1	1	1	Section 20, Rule 19.	
	Manbhum .	1	1	1	Section 20, Rules 4 (*b*), 9, 22, and 23 and section 13 (*l*).	
	Do. .	1	1	1	Section 20, Rules 7, 8 and 9.	
	Do. .	1	1	1	Ditto.	
	Do. .	1	1	withdrawn	Section 20, Rules 8, 19 and 20.	
	Do. .	1	1	1	Ditto.	
	Do. .	1	1	1	Ditto.	
Central Provinces .	Mohpani .	1	1	1	Section 20, Rule 17 (*b*).	Prosecution of workman by manager.

APPENDIX IV.

MISCELLANEOUS.

Statement No. 1.

List of Inspection Circles.

No. 1 Circle.	No. 2 Circle.	No. 3 Circle.
(*a*) All mines in the district of Manbhum, which are situated west of a line drawn from Adra Junction at mile 175 of the Bengal Nagpur Railway to Gobindpur at mile 169 on the Grand Trunk Road and continued across the district in each direction, and all mines in the district of Palamau.	(*a*) All mines in the districts of Burdwan and Bankura to the west of a line drawn from mile 131 on the East Indian Railway main line near Asansol to mile 141 on the Ondal loop near Gaurangdi, and continued across the districts in each direction; and all mines in the district of Manbhum east of a line drawn from Adra Junction at mile 175 on the Bengal-Nagpur Railway to Gobindpur at mile 169 on the Grand Trunk Road, and continued across the districts in each direction, and all mines in the districts of Hazaribagh, Gaya, Monghyr, Darjeeling and Ranchi.	(*a*) All mines in the districts of Burdwan and Bankura to the east of a line drawn from mile 131 on the East Indian Railway main line near Asansol to mile 141 on the Ondal loop near Gaurangdi, and continued across the districts in each direction, and all mines in the districts of the Sonthal Parganas, Birbhum, Singhbhum and Sambalpur.
(*b*) All mines in Assam.	(*b*) All mines in Baluchistan.	(*b*) All mines in the Presidency of Bombay.
(*c*) All mines in Burma.	(*c*) All mines in the United Provinces.	(*c*) All mines in the Central Provinces.
	(*d*) All mines in the Panjab.	(*d*) All mines in the Presidency of Madras.
	(*e*) All mines in Ajmer-Merwara.	

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 2.

List of holders of certificates as managers of coal mines in British India.

(*a*) Certificates granted to holders of English certificates of competency.

FIRST CLASS.

NAME.	No. of Indian certificate.	Date of Indian certificate.	No. of English certificate.	Date of English certificate.
Turnbull, John	155	25th March 1911 .	3511	30th December 1909.
Hines, Gordon Ewart . . .	156	15th December 1911 .	3496	30th October 1909.
Lang, George Lawrence . . .	157	Ditto.	3503	30th December 1909.
Fidoe, John Walter	158	Ditto.	3659	29th June 1910.
Entwistle, George	159	Ditto.	3078	8th January 1908.
Bridgett, Harry	160	Ditto.	2369	13th May 1904.
Wight, Llewelyn	161	Ditto.	3472	4th October 1909.
Loveband, Charles James Glenfield .	162	Ditto.	2011	26th May 1902.

(*b*) Certificates of competency.

FIRST CLASS.

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Mitchell, Lionel Patrick	57	25th March 1911.	
Cox, Henry Moncrieff	58	Ditto.	
Dutt, Aswini Kumar	59	Ditto.	

SECOND CLASS.

Chatterji, Hirendro Nath . . .	58	25th March 1911.	
Bhattacharji, Manmatha Nath . . .	59	Ditto.	
Mukherji, Mohini Mohan . . .	60	Ditto.	
Banerji, Govindra Chandra . . .	61	Ditto.	
Guise, Archibald Henry Charles . .	62	Ditto.	
Power, Clarence Eustus	63	Ditto.	

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 3.

List of Universities and Colleges in England and India approved by the Governor-General in Council for the purposes of Rules 32 and 33 under the Indian Mines Act, 1901.

Name of Institution and Degree or Diploma.	Date.
University of Birmingham in respect of its Degree of B.Sc. in Mining and Diploma in Mining.	11th June 1904.
University College of Bristol in respect of its Senior Diploma in Mining.	16th September 1904.
University of Cambridge in respect of its Diploma in Mining Engineering.	6th June 1905.
University of Durham in respect of its Degree of B.Sc. in Mining	21st December 1903.
Durham College of Science in respect of its Diploma in Mining .	29th June 1904.
University of Glasgow in respect of its Degree and Diploma in Mining.	28th September 1904.
Glasgow and West of Scotland Technical College in respect of its Diploma in Mining.	28th June 1904.
University of Leeds in respect of its Degree of B. Sc. in Mining and Diploma in Mining.	21st November 1904.
University of London in respect of its B.Sc. Degree in Mining for Internal Students, subject to the Degree being endorsed by the University with a certificate of four months' practical experience in a mine.	9th June 1905.
University of London in respect of its B.Sc. Degree in Mining for External Students, subject to the Degree being endorsed by the University with a certificate of four months' practical experience in a Mine.	7th August 1906.
Royal School of Mines in respect of its Associateship in Mining .	24th March 1904.
University of Oxford in respect of its Diploma B. for Colliery Engineers (in Scientific Engineering and Mining subjects).	11th February 1905.
University College of Sheffield in respect of its Diploma in Mining.	15th July 1904.
University College of South Wales and Monmouthshire in respect of its Diploma in Mining.	19th April 1904.
Wigan Mining and Technical College in respect of its Diploma in Mining.	26th August 1904.
Civil Engineering College, Sibpur, in respect of its Diploma in Mining.	22nd February 1907.
Merchant Venturers' Technical College, Bristol, in respect of its Diploma in Mining Engineering.	5th October 1905.
Victoria University of Manchester in respect of its Degree and Certificate of Mining.	14th February 1906.
University College of Nottingham in respect of its Diploma in Mining Engineering.	28th March 1906.
University of Sheffield in respect of its Degree of Bachelor of Engineering. (Mining).	30th June 1906.
Heriot-Watt College in respect of its certificate in Mining Engineering.	16th January 1908.
Calcutta, University in respect of its Degree of Bachelor of Engineering in the branch of Mining Engineering.	24th September 1910.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 4.

SIBPUR COLLEGE.

The Mining Classes.

CIRCULAR.

These classes are attached to the Overseer Section of the Apprentice Department.

General explanation.—The Mining Classes are designed to afford theoretical training in the principles of mining generally, to prepare students for positions of responsibility in coal or metal mines, and in the case of students attending for instruction in coal mining, to qualify them to appear for the examinations of mine managers, as required by the Indian Mines Act, VIII of 1901.

The course at Sibpur for regular mining students will extend over four years. At the end of the second year the sub-overseer examination is held. The specialised instruction in mining at Sibpur is given in the third and fourth years of the college course, according to the attached syllabus and the diploma examination takes place at the end of the fourth year.

The classes are open to both regular students and special students.

Regular students—Are those who have qualified for admission by passing the sub-overseer examination of the Civil Engineering College, or an equivalent test of other colleges.

Their age limits are 17 years minimum and 19 years maximum on admission.

Special students.—Persons resident in Bengal, who have been employed upon mines, will be admitted as special students under the following conditions:—

(*a*) that they have completed at least two years' practical work upon a mine ; and

(*b*) that they have passed (*i*) the B. Final Examination, (*ii*) the Matriculation or Entrance Examination of any Indian University, or (*iii*) any test equivalent to the Middle School Examination of the Code for European Schools.

There is no limit of age for such special students.

All applications for admission from outside candidates should be posted so as to reach the Principal's office by 1st April.

Regular students should apply in the proper form available from the Principal's office.

Special students must provide, (*a*) proof of educational attainments, and (*b*) a statement showing the nature and extent of their employment upon mines and the period thereof, supported by certificates from the mine managers under whom they have worked.

Scholarships awarded by the Government of Bengal.

For regular students.—Two scholarships of Rs. 12 monthly and three of Rs. 6 are provided. These will be awarded on the results of the sub-overseer examination by the Director of Public Instruction on the recommendation of the Principal. Students trained at the Civil Engineering College or any affiliated technical school in Bengal are eligible for these scholarships. If they are on the Reduced fee list, they will be charged full tuition fees.

For special students.—Two scholarships of Rs. 150 monthly for European candidates and two of Rs. 50 monthly for Indian candidates, each tenable for two years, are offered. These will be awarded annually by the Director of Public Instruction on the recommendation of the Mining Advisory Board.

These scholarships are available for candidates who have had at least two years' actual experience of colliery work. They must have passed the Calcutta University Entrance Examination or an equivalent. For Europeans the Middle Scholarship Examination of the Code for European Schools or equivalent is accepted.

There is no limit of age.

Application for these scholarships should be made to the Principal of the Civil Engineering College, when applying for admission.

There is no residential accommodation available at the college for special students, scholarship-holders or otherwise : they must make their own arrangement for board and lodging, and must attend the college daily from 8 A. M. A mid-day meal will be supplied if desired at the college at a definite monthly charge to be fixed by the Principal.

Scholarships awarded by the Government of Eastern Bengal and Assam.

For regular students.—Three of the value of Rs. 15, one being reserved for each of the following classes, namely, European, Muhammadan and Hindu, confined to students domiciled in Eastern Bengal and Assam.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 4—*contd.*

For special students qualified as above.—One of Rs. 30 for an European. Two of Rs. 20—one for a Muhammadan and one for a Hindu. The rates for special students are fixed on the understanding that they will reside at the college hostel. If accommodation is not available, Government are prepared to consider an increase. Applications for these scholarships to be made to the Director of Public Instruction of Eastern Bengal and Assam.

The session begins each year on or about the first Monday in May. The college closes for the long vacation about the first week of August and re-opens about the end of October.

Special students must pass all college test examinations and must appear at the diploma examination held at the end of the course.

The following fees will be charged from special students :—

Caution money deposit.—Rs. 5, which will be returned on leaving the college after deducting any charge-dues owing.

Tuition fee.—Rs. 3 monthly payable for 12 months in the year.

Mid-day meal.—Rs. 10 monthly for Europeans, and Rs. 5 for Indians.

All fees become due on the 15th of the month.

Regular students, who must be residents, will be charged in full the fees noted in the Rules of the Apprentice Department.

A camp of practical mining and surveying will be held for six weeks in the cold weather of each session in the colliery districts.

SYLLABUS OF MINING COURSES.

Course I.

Geology applied to mining.—(One lecture per week.)

Classification of rocks : characteristic fossils and economic products of the principal systems.

Structure of rock; foldings, faults, cleavage, formation of mineral veins.

Principles of geological surveying: methods employed in constructing geological maps and sections. Special reference to the geology of India.

Mining Engineering.—(Two lectures per week.)

Boring by hand and power machines.

Sinking and lining shafts; various methods employed in special cases.

Systems of haulage, underground and aboveground, aerial ropeways.

Hoisting, headgear, ropes, safety appliances.

Mining legislation.

Section A.—(One lecture per week.)

Methods of working coal, shafts, pillars, preliminary work, and various methods of working the seams. Special reference to thick coal working as practised in England and different parts of the world.

Shot-firing ; coal-cutting by machinery.

Surface subsidence and under-sea working.

Timbering and other supports.

Coal mine plans and sections, connecting surface and underground surveys.

Section B.—(One lecture per week.)

Prospecting for and methods of working mineral veins.

Alluvial mining and open workings.

Hydraulic mining ; dredging for gold ; ore-beds and deep leads, overhand and underhand stopping.

Hand and power drilling ; blasting, timbering.

Metal mine plans.

Course II.

Descriptive Mineralogy.—(One lecture per week.)

Physical properties of minerals ; description of various ores and fuels ; methods of determination.

Prospecting operations.

Mining Engineering.—(Two lectures per week during first-half of session.)

Drainage of mines ; adits, levels; pumping machinery ; dams ; boring against old workings.

Ventilation of mines ; natural and artificial ventilation ; splitting and regulating air-currents ; types of fans ; water-gauge and anemometer.

Power-application in a mine ; discussion of relative merits of steam, water, compressed air, electricity and oil, as sources of applied power.

Section A.—(One lecture per week.)

Description of gases found in coal mines; colliery explosions; safety lamps; instruments for detecting fire-damp; treatment of men overcome by foul air.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 4—*concld.*

Arrangement of surface works at a colliery; sorting and screening coals; coal-washing, briquette making, coking and bye-products.

Section B.—(One lecture per week).

Surface works of metal mines, sorting, crushing, sizing, and concentration of various ores. Modern ore-dressing machinery, and slime tables.

Special reference to treatment of gold, silver, copper, lead and zinc.

Cyanide and Chlorine treatment of slimes.

Statement No. 5.

The Mining Educational Advisory Board desire that colliery managers will kindly publish this information in their collieries, and use their influence to maintain a regular attendance of the students.

MINING INSTRUCTION IN BENGAL.

RANIGANJ AND JHARIA COAL-FIELDS.

Lectures will be delivered throughout the session at the following centres :—

1. Lecture room near Sijua station on Tuesdays at 6-30 P.M.
   Lecturer—Mr. B. Starks Field.
2. Lecture room near the Jharia Club on Mondays at 5-30 P.M.
   Lecturer—Mr. J. Wilson, B.SC.
3. Lecture room at Messrs. Apcar and Company's Charanpur Colliery on Fridays at 5-30 P.M.
   Lecturer—Mr. H. C. Read, B.SC., (BIRM.)
4. Lecture room near Dishargarh Club on Wednesdays at 5-30 P.M.
   Lecturer—Mr. L. A. Jacobs, B.SC., (DUN.)

The course of instruction, consisting of not less than 25 lectures, will commence the first week in November and end in the following May. At the end of the course an examination will be held, and candidates who pass the examination will receive a certificate recording their success. No candidate will, however, be permitted to sit for examination, unless he has attended 50 per cent. of the lectures.

All Europeans and English-speaking Indians are cordially invited to attend.

Particulars of the Sibpur College Mining Classes and of the scholarship connected therewith may be obtained from the Principal of the College. Instruction is given in Methods of Mining, General Engineering, Mechanics, Surveying, Science, Mineralogy and Workshop practice. On completion of the course (4 years for beginners and 2 years for those having previous mining experience and requisite educational qualifications), a diploma is granted to successful students The Mining Educational Advisory Board has the duty of annually selecting candidates for four scholarships tenable at the college (2 of Rs. 50 for Indians and 2 of Rs. 150 for Europeans). The Board gives preference to suitable candidates who have previously attended lectures at the mining centres under the Board's control.

The following Sub-Committees have been appointed for each centre.

RANIGANJ DISTRICT.

Dishargarh Centre.

Mr. G. C. Leach (Chairman).
„ Glen George.
„ J. Mackintosh.
„ Geo. Miller.
„ F. Owen.
Babu M. N. Roy (Begunia).
„ H. P. Mukherji (Chota Dhemo).
„ D. C. Tarafdar.
The Local Lecturer (Secretary).

Charanpur Centre.

Mr. C. J. E. David (Chairman).
„ S. Heslop.
„ R. Mitchell.
„ E. M. Patterson.
„ A. Russell.
Babu Rajoni Prokash Chuckerbutt.
The Local Lecturer (Secretary).

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 5—*contd.*

JHARIA DISTRICT.

Jharia Centre.	*Sijua Centre.*
The Chief Inspector of Mines (Chairman).	Mr. R. R. Simpson (Chairman).
Mr. T. Adamson.	„ A. Agabeg.
„ R. G. M. Bathgate.	„ E. S. Bennertz.
„ R. J. Browne.	„ W. Hutton-Williams.
„ A. S. Thomson.	Babu Sourindra Nath Dutta.
Babu Bhupati Mukherji.	„ Surendra Nath Sarkar.
„ Sita Nath Dutta.	The Local Lecturer (Secretary).
The Local Lecturer (Secretary).	

SYLLABUS OF THE COURSE OF INSTRUCTION.

THE course will treat principally of the more practical operations in actual mining, with special reference to India, and the principles underlying such operations will be thoroughly discussed. Special attention will be paid to the various methods of working thick seams. Sketches illustrating the lectures will be distributed free of charge.

At the close of each lecture, questions will be set for home work.

FIRST YEAR COURSE 1910-11 AND 1912-13.

1. *Geology.*—General structure of the crust of the earth: descriptions of fault, dyke outcrop, dip, strike, unconformity, etc.; composition and properties of coal; special reference to the coal measures in India: Importance of recording results of observations.

2. *Exploration.*—Advantages of borings; driving through faults, washouts, dykes, methods of maintaining the direction and gradient of such drivages.

3. *Boring and winning.*—Different systems of boring; choice of methods; cost of boring; winning coal by inclines, adits, shafts and crosscuts.

4. *Sinking.*—Site of colliery; position of shafts, excavation and shape; blasting with use of safety fuse and electric battery; explosives and detonators, their safe storing and handling; sinking and how to deal with difficulties: apparatus and tools used; lining shafts and scaffolding; pit-banking arrangements.

5. *Opening out and methods of working, surveying.*—Shafts, pillars; arching or supporting the pit bottom; quarrying; pillar and stall; double road stall; long wall; panel systems.

6. *Timbering and supporting.*—Fixing of props and double timber; chocks or cogs; special methods of timbering to withstand pressure from the roof, sides and floor; securing dangerous holes in the roof due to heavy falls; use of iron or steel girders; stowing and packing; arching.

7. *Gases met with in coal-mines.*—Their experimental preparation by chemicals and illustration of their physical and physiological properties; methods of detecting; explosion and gob fires.

8. *Ventilation.*—Natural and artificial methods; coursing the air; use of stoppings, brattices, doors, air-bridges, regulators; measuring the quantity of air, use of thermometer, barometer, water-gauge, anemometer; the friction of air in mines and the elementary theory of splitting.

9. *Safety lamps.*—Theory of the safety lamp, Sir Humphrey Davy's experiment; the Davy lamp, the Clanny and Thomas and Williams lamps, the Marsaut and Mueseler lamps; fire-lamp detectors.

SECOND YEAR COURSE 1911-12.

1. *Mechanical engineering of collieries.*—Winding engines, discussion of the different types, calculation of the dimensions of cylinders, length of stroke, diameter of drum, etc.; strength of winding ropes and chains, detaching hooks, capping winding ropes, care and examination of ropes.

2. *Pumping.*—Importance of a good system; measurement of quantities of water; lifting and forcing pumps; pumps for sinking; temporary and permanent pumps; calculation of dimensions of pumps to perform a given duty, strength of pipes, methods of supporting; different types of joints.

3. *Hauling.*—Tramways, tubs and waggons; conveyance by self-acting inclines; single rope haulage; main and tail; endless rope; endless chain; calculations concerning inclines, sizes of haulage engines, ropes, etc.; signalling; capping of haulage ropes.

4. *Methods of working and ventilation.*—Revision of First year Course work, followed by a fuller treatment of these subjects.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 5—*concld.*

5. *Surface arrangements.*—Boilers; Cornish, Lancashire, and water-tube types; boiler fittings, injectors, and steam-pipes, etc.; boiler explosions, incrustation, corrosion, and priming; calculations on boilers. Heapsteads; arrangement of roads around pit bank; simple screening and sizing.

6. *Transmission of power* by steam, compressed air, and electricity; discussing the relative merits of each system.

7. *Text-books recommended.*—Peel's or Kerr's Elementary Mining;
O'Donoghue's Mining Arithmetic.

A. DU PRÉ DENNING,
Supdt. of Industries, etc.,
Secretary to the Mining Educational Advisory Board,
Writers' Buildings, Calcutta.

Statement No. 6.

No. 6436—152.

GOVERNMENT OF INDIA.

DEPARTMENT OF COMMERCE AND INDUSTRY.

NOTIFICATION.

GEOLOGY AND MINERALS.

Simla, the 2nd September 1911.

In exercise of the powers conferred by Section 20 of the Indian Mines Act, 1901 (VIII of 1901), the Governor-General in Council is pleased to make the following rules, for the whole of British India, in respect of mica, manganese, and limestone mines, other than mines which have been exempted from the operation of the Act under Section 29 thereof.

PART I.

MANAGEMENT.

Notice of change of name and address of manager.

1. When a change occurs in the name or address of the manager of a mine, notice of the change shall be sent within one month, by the owner, agent or manager, to the Chief Inspector of Mines in India and also to the Magistrate of the district.

Inspection Book.

2. For every mine a book, to be called the Inspection Book, shall be kept, in which Inspecting Officers shall record their observations. The owner, agent or manager shall also write or cause to be written at the commencement of the book—

(*a*) the name of the mine,
(*b*) the name and address of the owner of the mine and of the agent (if any),
(*c*) the name and address of the manager of the mine,
(*d*) the name of the competent person or persons appointed under Rule 3, and
(*e*) the system of signals provided in accordance with Rule 12.

Daily Report Book.

3. The manager or some competent person or persons appointed in writing, by the owner, agent or manager for the purpose shall, at least once in every 24 hours, inspect every part of a mine in or through which any person has to work or pass, and, if more than 20 persons are employed in the mine simultaneously, shall without delay write or cause to be written a report of such inspection in a book, to be called the Daily Report Book. Every such report shall be signed by the person making the inspection.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 6—*contd.*

Procedure to be followed when a person required to report is unable to write.

4. Where any person required by these rules, or by any special rule made under Section 21 of the Indian Mines Act, 1901, to make any report is unable to write, he shall be present when his report is written for him, and shall have it read over to him, and shall attach his thumb-mark to it. The person writing the report shall also sign his name at the end, together with a statement that it has been read over to the person for whom it was written.

Books and rules to be kept in a convenient place.

5. All books which are required to be kept under these rules, together with a copy of the Indian Mines Act and of all rules applicable to the mine, shall be kept at an office or other building as near as conveniently may be to, and used in connection with the working of the mine, and shall be produced on the request of an Inspector of Mines, a Magistrate, or any person authorised in that behalf by the local Government.

PART II.

Shafts and Outlets.

Shafts and outlets.

6. (*a*) At every mine, other than an open quarry, where more than 20 persons are employed below ground, or where in the opinion of the local Government it is necessary, there shall be at least two shafts or outlets, not nearer to one another than twenty feet, affording separate means of ingress and egress available to all the persons employed in the mines.

(*b*) Proper arrangements shall be made for persons to descend to and ascend from the mine at each of such shafts or outlets. If apparatus is necessary, it shall be kept on the works belonging to the mine and shall be constantly available for use.

(*c*) The foregoing provisions of this rule with respect to shafts and outlets shall not apply—

(*i*) while a shaft is being sunk or an outlet being made;

(*ii*) to any working for the purpose of making a communication between two or more shafts or outlets.

(*d*) In cases where there are special difficulties which make compliance with the foregoing provisions of this rule not reasonably practicable, the mine may be exempted therefrom by the local Government, subject to such conditions as it may think fit to impose.

PART III.

Ventilation.

Ventilation in shafts, tunnels and working places.

7. An adequate amount of ventilation shall be constantly produced in every mine, to such an extent that the shafts, tunnels and working places of the mine, and the travelling roads leading thereto, shall be in a fit state for working and passing therein.

PART IV.

Explosives and Shot-firing.

Storage of explosives in mines prohibited.

8. No explosive substance shall be stored in the mine.

Secured cases or boxes for taking explosives in mine.

9. No explosive substance shall be taken into the mine except in secured cases or boxes, containing not more than 5 lbs. each, and a person shall not have in use, or keep for use, at one time in any one place within the mine, more than one of such cases or boxes. The place in the mine at which any such case or box is in use or is kept for use, unless solid ground directly intervenes, shall not be less than thirty feet from a place at which any other such case or box is in use or kept for use.

Provided that an Inspector of Mines may, in special cases and by order in writing, permit, subject to such limitations as he may prescribe, the use at one time in one place of more than one of such cases or boxes.

Detonators.

10. No detonator shall be carried or kept in the same case or box with any other explosive material.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 6—*contd.*

11. No person shall use any iron or steel implement in the process of charging or stemming for blasting.

Iron or steel implements.

12. Blasting shall not be commenced until such warning as will prevent danger to the persons working in the mine and its vicinity has been given, by an efficient system of signals or by other means arranged by the manager. Notice shall similarly be given as soon as blasting is finished.

Warning to be given before and after blasting.

13. If a shot has, or appears to have, missed fire, no person shall approach the place until at least one hour has elapsed, unless the attempt to fire the shot has been made by electrical means when this interval may be reduced to fifteen minutes after the battery has been disconnected.

Misfires.

14. After a hole has been charged and made ready for firing, no person shall remove or attempt to remove anything therefrom.

Removal of things from holes which have been charged.

15. A new shot-hole shall not be commenced in any portion of a shot-hole left by a previous shot.

New shot holes.

16. If a shot has missed fire, no new hole shall be commenced within twelve inches from the hole in which the misfire occurred, and care shall be taken to drill the hole in such a direction that there is no danger of touching the unexploded charge.

The new hole shall be bored in the presence of the manager or of the person who exercises daily personal supervision over the mine or that section thereof, and also, if possible, of the man who bored the hole in which the misfire occurred. Such manager or person exercising daily personal supervision shall also be present during any operations undertaken for the removal of rock within six feet of the unexploded charge.

PART V.

SAFETY OF PERSONS EMPLOYED.

17. The roofs and sides of all travelling roads and working places shall be made and kept secure.

Roofs and sides of travelling roads and working places.

18. In open workings the overburden and all loose ground and material shall be removed sufficiently far from the edge, or otherwise made secure, in order to prevent danger to persons employed in the mine.

Overburden, loose ground and material.

19. The sides of open workings shall be sloped, stepped or secured, in such a manner as to prevent danger from falls of material.

Sides of open workings.

20. When an open working is worked in steps, the steps shall be of sufficient breadth in comparison with their height to secure safety.

Steps in open workings.

21. Every flywheel and all exposed and dangerous parts of the machinery used in or about a mine shall be kept securely fenced.

Fencing of exposed and dangerous parts of machinery.

22. Where no enactment for the regulation and inspection of steam boilers and prime movers is for the time being in force every steam boiler, whether separate or one of a range, shall have attached to it a proper safety valve, and also a proper steam gauge and water gauge, to show respectively the pressure of steam and the height of water in each boiler.

Steam boilers.

PART VI.

MISCELLANEOUS.

23. Any place in or about an excavation which is dangerous shall be, and shall be kept, securely fenced. Should any doubt arise as to whether a place is dangerous or not, the opinion of an Inspector of Mines, or of the District Magistrate within whose jurisdiction the excavation is situated, shall be conclusive on the point.

Fencing of dangerous place in an excavation.

24. Where an excavation extends within fifty feet of a public road or dwelling house, substantial fencing shall be erected and maintained around the excavation adjacent to the road or dwelling.

Fencing of excavation near public road or dwelling house.

APPENDIX IV—*concld.*

MISCELLANEOUS.

Statement No. 6—*concld.*

Accumulation of water.

25. Where a place is likely to contain a dangerous accumulation of water, the working approaching that place shall not, at any point within thirty feet thereof, exceed six feet in width or height, and there shall be constantly kept at a sufficient distance, not being less than five feet in advance, at least one borehole near the centre of the working, and sufficient boreholes on each side, and, where necessary, above or below.

Drinking water.

26. A sufficient supply of good drinking water shall be provided or kept in or near the mine, so as to be easily accessible to all persons employed in or about the mine, and care shall be taken to secure that the supply remains free from contamination.

B. ROBERTSON,

Secretary to the Government of India.

Statement No. 7.

LAND ACQUISITION (MINES) ACT, 1885.

Particulars required to be furnished by colliery owners to Local Governments when giving notice under Section IV of the Land Acquisition (Mines) Act, 1885, of their intention to work coal under land acquired for a railway.

(*a*) The name, residence and profession of the person giving the notice.
(*b*) The name of the mine together with that of the village and district in which the mine is situate.
(*c*) The name of the railway line or of the siding and the main line to which the siding is attached, under which the mine is situate.
(*d*) The names of the railway stations and the mileage between which the said siding or the said portion of the railway land, under which the mine is situate, falls.
(*e*) The number and date of the declaration under which the land was acquired.
(*f*) A tracing showing the boundaries of and the area over which the acquired land extends.

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Department of Mines, India.

REPORT

OF THE

CHIEF INSPECTOR OF MINES IN INDIA

Under the Indian Mines Act (VIII of 1901)

FOR THE

YEAR ENDING 31st DECEMBER

1912

BY

G. F. ADAMS, M.Inst.C.E.,

Chief Inspector of Mines in India

LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC SOCIETY.

CALCUTTA
SUPERINTENDENT GOVERNMENT PRINTING, INDIA
1913

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FROM

G. F. ADAMS, ESQ., M.INST.C.E.,
Chief Inspector of Mines in India,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
DEPARTMENT OF COMMERCE AND INDUSTRY.

Dated Dhanbaid, 19th June 1913.

SIR,

I HAVE the honour to submit the report upon the inspection of mines in British India for the year ending 31st December 1912.

EXPLANATORY INTRODUCTION.

It is necessary to explain that this is a report relating entirely to the administration of the Indian Mines Act, 1901, and is not a complete statistical review of Indian Mining and analogous industries. It should be remembered in reading the statistics that there must be a considerable output from quarries which are under 20 feet deep; and owing to the exclusion of such places from the scope of the Mines Act, these figures should not be regarded as a complete index to the production of the mineral wealth of the country.

Figures of production of all minerals raised in British India and the Native States, whether from workings under the Act or not, are published annually in the Records of the Geological Survey of India, whilst every five years a Quinquennial Review of the Mineral Production of India is issued by the same Department. The latest review published is that for the years 1904-1908 (Records, Geological Survey of India, Vol. XXXIX). Figures for Mysore, where most of the Indian gold is raised, are given in the report of the Chief Inspector of that Native State, and mineral statistics may also be found in the administrative reports of the various Presidencies, Provinces and States of India.

This report is divided into five sections, *viz.* :—

Section I.—Persons employed.
„ II.—Output of mineral.
„ III.—Accidents.
„ IV.—Prosecutions and additions to the Act.
„ V.—General remarks.

Section I.—Persons employed.

During the year 1912 the average number of persons working in and about the mines regulated by the Indian Mines Act was 164,302, of whom 103,980 worked underground and 60,322 on the surface. One hundred and one thousand nine hundred and seventy-one of the persons were adult males; 56,507 were adult females and 5,824 children under 12 years of age. This is an increase of 17,966 workers or 12·27 per cent.

The increase related chiefly to those employed in coal mines, whose numbers increased by 14,794. This increase corresponds with that in the

number of those working in the coal mines of Bengal and Bihar, which was 14,736. In the district of Manbhum, which may be taken here to mean the Jharia coal-field, it is reported that the supply of labour was not in excess of the demand, while in the Raniganj coal-field there was a distinct shortage of labour. Owing to the new large undertakings in the latter coal-field, alluded to in the next section, considerable additions to the present labour force will be required and considerable difficulty will be experienced in fulfilling those requirements, unless more systematic methods of recruiting, than those adopted up to now, are employed.

The increase in the number of those working in mines other than coal mines was 3,172. It is chiefly made up of increases in mica and in wolfram.

Except in some of the districts in the Central Provinces where manganese mines are situated, no other serious shortage of labour is reported. Wages have risen at the mica mines in Madras.

Section II.—Output of mineral.

COAL.

The output is the largest yet produced in British India, the next largest having been raised in 1908, when slightly over 12 million tons were recorded. The following year, 1909, there was a set back in the figures of ·85 million tons, since when there has been a steady annual increase, culminating, for the year now under review, in an output of 14,044,368 tons. This, compared with 12,048,726 tons raised in 1911, is an increase of 16·56 per cent. In 1911 there was an increase of 5·80 per cent. These figures point to an expansion of trade, which it is to be hoped will be maintained. As far as the physical conditions of the great majority of the mines now opened are concerned, there is nothing to prevent further increases of output from them.

Of the total, 13,429,566 tons or 95·62 per cent. were raised in Bengal and Bihar, the rate in the previous year being 95·19 per cent. In these provinces there was an increase of 1,960,662 tons, which is slightly less than the increase for the whole of India, which was 1,995,642 tons. The improved condition of the trade was general throughout India. But the increase again comes mainly from the Jharia coal-field, where there has been an increase of over 1¼ million tons, or 20·07 per cent.

There were increases of 14·66 and 3·7 per cent. in the Raniganj and Giridih coal-fields. It is to be expected, however, that a larger comparative increase will accrue from the Raniganj field in the next few years. During last year, a depth of one thousand feet has been reached at one shaft, another has been sunk to a depth of over nine hundred feet, and a third, expected to be about the same depth, is in course of sinking. These are three separate undertakings. For operations of this magnitude to be successful, a large output is essential.

In the provinces outside Bengal and Bihar, with the exception of a decrease of 64·28 per cent. in the small output of the North-West Frontier Province, increased outputs are recorded in every coal-field, which are, in descending order as far as output is concerned, as follows:—

Assam ·58 per cent., Central Provinces 10·57 per cent., Baluchistan 7·35 per cent., and the Panjab 25·62 per cent.

The output per person employed during the year was (*a*) below ground 180 tons, and (*b*) above and below ground 115 tons. The figures for the four years preceding were (*a*) 166 and (*b*) 106. Taking each group of coal-fields separately these figures were as follows:—Bengal and Bihar (*a*) 182 and 168, (*b*) 117 and 107; the Central Provinces (*a*) 129 and 121, (*b*) 92 and 84; Assam (*a*) 225 and 252, (*b*) 140 and 158; Baluchistan (*a*) 64 and 69, (*b*) 43 and 46, and the Panjab and North-West (*a*) 64 and 41, (*b*) 39 and 25. The output in England in 1911 was 331 tons per person employed below ground, and 268 tons per person employed above and below ground.

MICA.

There was again a large increase in the output, which was 41,660 cwts. compared with 31,686 cwts. raised in 1911. This is an increase of 9,974 cwts. or 31·47 per cent. It was most marked in the Madras field. The demand for all classes of mica was fully maintained, and the prices of slab mica gradually improved as the year went on, weakening a little towards the end. The market for films, although always sufficient to absorb available supplies, was depressed by excessive quantities of low grade assortments. On the other hand, really first class splittings fetched quite good prices, as the demand exceeded the supply.

During recent years there has been a development of the mica industry in German East Africa, which will probably affect the industry in India, sooner or later.

With reference to the notice in last year's report of more modern methods of work, one large firm is making steady progress in this direction in underground development, by blocking out areas for stoping, and sinking shafts at suitable intervals. Though it is too early as yet to say whether this progressive attempt will be successful, there is no reason to doubt it. Hitherto there has been a very marked disinclination among mine owners to drive any exploration galleries, and in consequence large quantities of mica must have been left unworked, which a very little exploratory work would have disclosed, and therefore it is sincerely to be hoped that this method of blocking out areas for stoping will prove successful, in which case other owners will be induced to adopt it.

MANGANESE.

The output of manganese ore again decreased, being 423,464 tons compared with 441,426 tons in 1911. This is a decrease of 17,962 tons or 4·06 per cent. The quoted price per unit of ore increased during the year to about eleven pence, but the industry suffered heavily, owing to the abnormal rise in ocean freights, which advanced by something like 80 per cent. Mine owners were actually worse off than in 1911, when, although the selling price of the ore was considerably lower, freights were normal.

GEMS.

There was an increase of 12·15 per cent. in gems, the output being 323,247 carats, while in 1911 it was 288,216 carats. With the exception of 2 carats of diamonds from Madras, the entire output is from the ruby mines in Burma, from which, in addition to rubies, which form the chief asset, sapphires and spinels are produced also. There appears to have been no change in the ruby market in 1912 from its condition in 1911. Sapphires, however, jumped into great demand, prices, especially for really good stones, were as high, if not higher, than at any previous time. These high rates have stimulated native surface mining, and more valuable stones are stated to have been found last year than in the previous ten years.

GOLD.

The output decreased from 8,277 ounces in 1911 to 7,269 ounces. This decrease, however, is due to the fact that in 1912 no further smelting was done in the Dharwar gold-field. The entire output now comes from one mine in the Anantapur district in Madras, and an increase was recorded. As reported last year this is still the only mine in the producing stage. Considerable progress has been made during the year and there has been a marked increase in the output of ore. It is proposed to erect an additional 10 heads to the battery of stamps. A plant for treating the tailings by the cyanide process is in course of erection. There are two main shafts on the property. One was sunk 269 feet during the year to a depth of 550 feet and sinking is still in progress. The other shaft is 575 feet deep.

There are two other mines in this field. One is still in the prospecting stage, but the other, at the southern end of the field, although not yet in the producing stage, has reached a vertical depth of 800 feet.

The field is employing more labour every month and there is every prospect of the mines being worked more extensively.

COPPER.

The output was 8,984 tons of ore compared with 2,079 tons in 1911. This is a substantial increase, in view of the fact that the output comes entirely from one mine, the Rakha Hills mine of the Cape Copper Company in the Singhbhum district of Bihar and Orissa. This Company has been prospecting in the locality since 1907 and has now reached the producing stage. The main shaft was 764 feet deep, measured on the incline, at the end of the year, and the amount driven, risen and sunk was 10,952 feet, or nearly two miles. The longest level is half a mile from one extreme end to the other. A concentration plant has been ordered, and it is proposed to instal an electrical installation for all motive power, including power for hoisting.

SAMARSKITE.

This valuable mineral was again extracted from the same mica mine in the Nellore district in Madras, as was referred to in the last report, the output being $29\frac{1}{2}$ cwts. valued at Rs. 1,213-4-0, as compared with $23\frac{3}{4}$ cwts. valued at Rs. 1,329-8-0, in 1911.

WOLFRAM.

In 1909 the occurrence of wolfram in the districts of Tavoy and Mergui commenced to attract attention. A great development has since taken place and a very large number of areas have been taken up on prospecting licenses. In 1912 the output recorded was 25,397, compared with 8,394 cwts. recorded in 1911, and 28 mines, as compared with 4 in 1911, were brought definitely under the Act. The commonest method of extraction is by ground sluicing, and in one instance "hydraulicking," or the forcing of water at high pressure through a specially constructed nozzle, is practised in the rainy season. Actual mining on the veins is however on the increase, open cuts, extending in some cases to 100 feet in depth, have been excavated, and the driving of adits, levels and winzes is now carried on to a considerable extent. There are, however, no fitted winding shafts, as the veins have only been attacked in hills, where access can be obtained by adits. At a majority of the mines no machinery whatever is employed. Two extraction mills have been erected.

OTHER MINERALS.

There were increases in iron, salt, slate, corundum, magnesite, Jabalpur clay, galena, bauxite and tin and decreases in limestone, fuller's earth, steatite, graphite and chromite.

Section III.—Accidents.

During the year 1912, at mines regulated by the Indian Mines Act, 1901, there were 133 fatal accidents, being a decrease of 4 as compared with the number in 1911, and an increase of 4 as compared with the average number of last four years.

These accidents involved the loss of 185 lives. This is an increase of 11 upon the number of deaths in 1911. In that year, however, only two accidents caused more than 3 deaths (14 and 4), whereas in 1912 one accident caused 23 deaths and two caused 4 deaths. Moreover, 7 accidents, involving 13 deaths, occurred in wolfram mines, which had not been previously brought under the scope of the Act.

Of these 133 accidents, I regard (A) 49 as being due to misadventure, (B) 37 to the fault of the deceased, (C) 9 to the fault of fellow workmen, (D) 7 to the fault of subordinate officials, and (E) 31 to the fault of the management. The number in classes B and C together is large, but it must be remembered that the Indian miner, in every part of India, is to a great extent ignorant of the dangerous conditions under which he works, and although there were many cases of what can only be called foolhardiness and deliberate disobedience of

orders, there were others which go to show that increased supervision is still necessary. Supervision, all over India, is on the whole very much better than it used to be few years ago. Still, more remains to be done in this direction, as much in the interests of the mine owners as in that of the workers.

The death-rate per thousand employed was 1·12, that of the preceding four years being 1·18. At coal mines only these figures were 1·29 and 1·34, at mines other than coal ·65 and ·74. At coal mines in England, during the ten years ending with and including 1911, the death-rate per thousand employed varied from 1·19 (lowest) to 1·69 highest.

The death-rate per million tons raised at coal mines only was 11·17, that of the preceding four years being 12·62. At coal mines in England during the ten years ending with and including 1911 the death-rate per million tons raised varied from 4·29 (lowest) to 6·37 (highest).

Of the persons killed 145 were males and 40 were females. As is only natural from the nature of their several employments, the death-rate per thousand is very much higher in the case of males than in that of females.

The deaths occurring in each class of mine worked were as follows:—

One hundred and fifty-seven in coal mines, 2 in mica mines, 3 in manganese mines, 1 in gems mines, 4 in gold mines, 13 in wolfram mines, 2 in copper mines, 2 in clay mines and 1 in corundum mines.

One person lost his life by explosion of fire-damp; 79 by falls of roof and sides; 24 in shafts; 8 by explosives; 5 by suffocation of gases; 23 by irruption of water; 16 by haulage; 7 by other accidents underground and 22 on the surface.

I am pleased to be able to report a substantial decrease in the number of deaths from falls of roof and sides.

A list of these accidents appears in Appendix II, Table I. In addition to them there were 21 others, causing the deaths of 24 persons. These also appear in Appendix II, Table I, but are listed separately, a reason being given in each case for their exclusion from the statistical tables.

In the Bengal and Bihar coal mines, where the large majority of the statistical accidents occur, there were 137 deaths compared with 118 in 1911. If the one accident which caused 23 deaths, and which was a drowning accident, due to misadventure, and caused by an irruption of rain flood water, is eliminated, there were 114 deaths, and this, with the very much increased output, works out at a death-rate of 8·48 per million tons raised as compared with 10·50 for the preceding four years. It is to be hoped that this improvement is due to greater care and vigilance on the part of managers, and to improved supervision. If it is, the improvement should be maintained. On the figures, as they stand, with the drowning accident included, the death-rate at coal mines in these provinces was 10·20 per million tons raised as compared with 11·17 for all coal mines.

The necessity of fencing boiler feed-water tanks, the fixing of safety chains to shaft cages, and the providing of second stopblocks on haulage inclines and of shaft harness when men are working in shafts was proved by the occurrence of accidents, which in all probability would not have occurred, had these provisions for safety been adopted.

At one coal mine, the manager has offered rewards to the subordinate Indian officials for proficiency in knowledge of the vernacular translation of the general rules.

Owing to considerable delay in the preparation of an official Bengali translation of the special rules for coal mines in these provinces, their introduction is still in abeyance. This work has just been completed and it is intended that these rules shall be established during the ensuing cold season.

There were 139 serious (non-fatal) accidents throughout British India, causing injury to 153 persons.

As mentioned in the last report, salvage operations were commenced in the case of a fire at the Baraboni Coal Concern's Haripur mine. Two attempts

were made, but were unsuccessful. The management, however, feel confident that the mine will soon be regained.

The above remarks apply also to the East Indian Coal Company Limited's Kendwadih mine referred to in the last report. Certain progress has been made in salvage operations, which, it is hoped, will eventually be successful.

Each accident is briefly described in Appendix II, Table I, but the following are reported on at greater length. The numbers refer to the numbers in the Appendix.

EXPLOSIONS OF GAS.

No. 1 Eastern Coal Company Limited's Bhowra coal mine.

This accident, by which one miner was killed, is illustrated by plan A. An advance crosscut A B was being driven and was being ventilated by a hand fan. Gas was constantly giving off in the crosscut, but in such small quantities that, when the fan was kept going, it could not be detected. But if the fan was stopped, gas accumulated in the crosscut, which was 5 feet high and 4 feet 9 inches wide at the face. The morning before the explosion, there having been no work the night before, the manager found gas only ten feet beyond the fan, and three days after the explosion I found it just beyond the fan.

There was no appointed lamp station. The sirdar for each shift had a safety lamp, and, after testing the crosscut for gas at the commencement of each shift, the lamp was handed over to the head of the gang working in the crosscut, but, as soon as the fan had cleared the gas naked lights were allowed to be taken to the face. The miners kept the safety lamp in the face, but the carriers were using naked lights.

The sirdar's evidence was to the effect that when testing for gas, on the morning of the explosion, the light of his safety lamp went out in the gas, and he returned to the shaft to relight the lamp, and that while he was doing so, the deceased and two other miners came down. He stated that he told them that he had found gas in the crosscut and told them not to go in, that he would come and examine the place again as soon as his lamp was relighted, and that they went on, as he was relighting the lamp. He further stated that subsequently he went after them, but saw a flame up in the crosscut and found deceased staggering back near the fan. The other two men were about thirty feet back and in a confused state.

An open lamp was found at the point indicated on the plan. It may be noted that it was on the intake side of the brattice sheet, but only a few feet from the end of it.

It was evident that the deceased had placed the light here and had started the fan, driving the gas back on to the light, at which it exploded. He was badly burned and died four days afterwards.

It was impossible to obtain any corroboration of the sirdar's statement, as the two miners who were with the deceased, and who were said to be his brothers, had left the colliery. If it was true, he could have had very little control over his men.

On the 14th of August 1911, the assistant manager was slightly singed by gas, in a gallery close to the crosscut, and a miner was burned about the shoulders on the following day. Gas was reported in the vicinity from time to time from then to the date of the explosion under review. It was considered that deceased met his death owing to a breach of the rules regarding safety lamps, and a prosecution was initiated against the manager, as detailed in section IV of this report.

FALLS OF ROOF AND SIDES.

No. 13.—Katras Jharia Coal Company Limited's Sibpur coal mine.

While some miners were engaged in drawing timber from under some roof coal, 2 feet thick, in a place where a pillar of coal had been taken out, a sudden fall of the coal took place, swaying out four props, three of which struck deceased and killed him on the spot. The props were 17 feet long. In this

case the management contended that over the greater part of the mine the roof over the coal was too weak to be supported on vertical props, although it was admitted that in this particular area the roof was strong. The practice of leaving roof coal, when getting pillars, is, however, much too common. An element of risk is introduced, which might easily be avoided by the much safer and more economical process of taking down the roof coal as the work on the pillar progresses in the manner shown in plan B. A nicking is cut through the roof coal up to the sandstone on the opposite sides of the adjoining galleries to the pillar about to be attacked, and the faces thus formed are carried across to the sides of this pillar until they form one with them. Except in the rare cases where the roof above the coal is too weak to be supported by vertical props this procedure is perfectly safe, as well as having the merit of saving a considerable amount of coal, which is inevitably lost under the other conditions, under which the roof coal, sometimes 3 feet to 4 feet thick, is abandoned over large areas in the coal-fields. This loss is not justifiable in view of the experience which has now been gained of goafing operations in the thick seams in India. In seams liable to spontaneous combustion it involves the risk of communicating fire from one point to another in the goaf, if it does not give rise to spontaneous combustion itself.

No. 31.—Union Coal Company Limited's Angarpatra coal mine.

This accident occurred in what is known as the bottom section of No. 15 seam. The section, from the top downwards, is:—coal 1 foot 8 inches, a stone band 3 inches, coal 3 feet 3 inches, a stone band 2 inches, and coal 2 feet. It was the custom to work in the bottom coals, undercutting the upper band to a depth of about 2 feet, and then to take down the band and top coal. In this case a pillar 26 feet long had been undercut to a depth of 2 feet over a length of 15½ feet, without timbering. A slippery joint was exposed and a mass of coal fell away and killed a miner. This method of working cannot be commended. If top coal is undercut in this way, timber should be set. Since the accident the bottom coal and bottom band have been left and timber set upon it, and undercutting is to be limited to a depth of from 9 inches to 12 inches.

No. 35.—Empire Coal Company Limited's Sudamdih coal mine.

The scene of this accident was an old quarry, about 50 feet deep, in which, three weeks before the accident, the manager decided to reach a seam of coal situated below the seam originally worked, by excavating near the outcrop edge, where the overburden was 28 feet thick. Before doing so the side, which was of earth, was dressed back from 5 to 10 feet in thickness from the surface to the foot of the quarry and put on a slope of 60°.

Daily inspections were made by the manager and assistant, but no results of such inspections were recorded.

Two days before the accident the manager made an inspection in the afternoon and was satisfied that the place was safe. On the following day the inspection was made by the assistant at 9 o'clock in the morning when he observed that a portion of the side measuring about 7′×2′ and situated about 4′ up the side was damp. He states that it was not very damp, no water was dripping, but, as he had not noticed it on a previous occasion, he reported the fact to the manager verbally, who questioned him as to the effect it had produced on the side and was assured by him that there was no danger. The manager was evidently satisfied with the report for he did not examine the place himself. At 3-30 o'clock the following morning, or 18½ hours later, while four men were at work, the side collapsed. About 100 tons fell and two men were buried and killed.

No inspection was made during the night on which the accident occurred by any official.

In regard to the cause of this accident, there was a drain situated near the edge of the quarry for carrying water past the excavation, to prevent it entering the mine. On both sides of this drain the ground was sodden with water,

and there is no doubt that percolation extended from it to the side of the quarry and produced the damp patch of ground observed by the assistant. The water acted as a lubricant, as it would in such ground, and lessened cohesion to such a degree that the side, standing at such a high angle, became unstable and ultimately slipped along the plane of percolation.

The failure to keep up a daily report book in regard to this part of the mine was considered to be a breach of rule, and a prosecution was initiated against the manager, as detailed in section IV of this report.

IN SHAFTS.

No. 76.—Lodna Colliery Company Limited's Sripur coal mine.

A shaft 16 feet in diameter had been sunk to a depth of 140 feet. The banking level was fitted with folding doors, arranged to rest slant-wise at an angle of about 90°, the opening forming nearly a square, one side being 5′ 6″ long and the other 5′ 8½″ long. The hoppit was of the usual self-tipping type of one ton capacity, with an overall diameter of 4′ 4½″, and the locking service for the bow consisted of a simple two-pronged fork of weak construction, hinged to the side of the hoppit. The winding engine was 12″×24″, geared 1 to 4, fitted with a drum 6 feet in diameter, and the winding rope was of the non-twisting class.

The accident happened at 6 A.M. just as the shift was about to change. The hoppit, filled to the brim with stone, was being raised and, on reaching the pit top, it collided with one side of the door frame. One prong of the locking fork was bent by the force of the collision, as shown in photograph No. 1 on plate A, to such an extent that the bow of the hoppit was released, the hoppit was overturned and about 15 cwts. of stone were discharged into the shaft, at the bottom of which 18 sinkers were at work. With the exception of four persons who were killed and three persons who were injured, all the sinkers were engaged at the time in drilling side holes. To this they owe their escape.

All the machinery was in working order. One of the banksmen stated in his evidence that he observed a slight oscillation of the rope while the hoppit was being raised, but he did not attach any importance to the fact, and it cannot be stated with certainty whether this oscillation was due to neglect to steady the hoppit at the shaft bottom, or to a sudden application of the brake to retard the speed, but it was due to one cause or the other, and it was this oscillation which caused the accident.

Folding doors are excellent appliances for sinking shafts, but the application of them is imperfect without the addition of guides. The best and safest form are ropes guides which reach from the top of the shaft to within 30 or 40 feet above the sump, the hoppit being guided on by means of a rider, which should be designed to permit the use of a detaching hook. This combination moreover has obvious advantages in the way of quick, as well as safe, winding, thereby expediting the work of sinking, and ensuring an earlier realisation of profits. All deep sinkings should be carried out with these arrangements. Even if, however, such guides are not fixed, short strap or plate guides should be fixed at the top of the shaft, to guide the hoppit into the folding doors. From the statement of dimensions given above it will be seen that the clearance between the hoppit and the door frame was only 6¾″ in one direction and 8″ in the other. Even with guides this amount of clearance would be small, but without them, as in this case, the most careful attention to winding and steadying could not in my opinion have averted a collision with the door frame for long, particularly as the headgear was nearly 30 feet high. As a matter of fact the folding doors were fixed less than a fortnight before the accident.

Photograph No. 2, on plate A, shows the hoppit between the folding doors.

The accident was actually due to the weakness of the catch or locking device on the hoppit. This, as I have stated, was merely a single two-pronged fork hinged to the side of the hoppit, to permit of its being raised or lowered to release or secure the bow. It is not a type to be relied on and ought not to have been used, because the slightest upward pressure on the catch would release the bow

and sufficiently severe downward pressure would wrest the catch from its position, with the same result.

Perhaps the safest form of catch is that which consists of a collar encircling the bow of the hoppit, which when in use passes over a projection rivetted to the side of the hoppit, any upward movement of the collar being arrested by means of a cotter pin. When it is desired to tip the hoppit, the cotter pin is withdrawn and the collar raised and hung on a boss made for the purpose on the bow. Even with this form of catch in use it is always prudent to have another catch on the other side of the hoppit.

Considering the type of catch that was used, there should have been two of them.

No. 79.—Messrs. Trigunait Brothers' Angarpatra coal mine.

A man was killed at the bottom of a sinking pit by a stone falling out of a small basket, in which it was being raised to the surface. The shaft was 90 feet deep and persons and rubbish were raised by women pulling the rope and basket. This is a customary way of sinking in India, but several accidents from time to time have proved the danger of the method, except at very shallow depths. After a depth of about 60 feet has been attained, machinery should be employed.

BY EXPLOSIVES.

No. 87.—Khas Jharia Coal Company's Phularibad coal mine.

In this case detonators were being tested with a galvanometer. An explosion occurred, resulting in the death of three men. It was evident that these detonators were being tested with dynamite close at hand, even if the detonator which exploded was not actually in a dynamite cartridge at the time. The manager was surprised to be told of the great danger attending such an action. The testing of detonators by a galvanometer is a great safeguard against the risk of missfires, which are a prolific source of accidents in mines, but a detonator is liable to explode when under test. No explosive should be allowed anywhere near where the operation is being carried out, and the detonator itself should be inserted in a pipe or similar receptacle, to avoid an accident in the event of its exploding.

IRRUPTION OF WATER OR FALLING INTO WATER.

No. 90.—Phularitand Coal Company, Limited's Phularitand coal mine.

This lamentable accident, by which twenty-three persons lost their lives, was caused by a sudden overflow of rain flood water into an incline.

The seam worked is No. 12 seam, which is 8 feet to 9 feet in thickness and dips to the south at an angle of 1 in 7. The coal is raised to the surface by a hauling engine through an inclined cutting on the outcrop known as No. 2 incline, and this road is also used by persons entering and leaving the mine. The second or emergency outlet prescribed by law is through No. 2 shaft, where a head frame, pulley and rope are provided for raising persons. An area, measuring 1,200 feet on the strike by 450 feet on the dip, had been cut up into pillars, 25′ to 30′ square, by galleries 10 feet wide.

The accident is illustrated by plan C and plates B and C. As may be seen from the plan the incline is situated in low lying ground, and some three feet above the natural drainage channel of a considerable catchment area. A high embankment for haulage purposes was made in 1909 and was swept away during the rains of the same year. In the cold season of 1909-10 this embankment was rebuilt, and a small stone culvert in it was replaced by the bridge at C, 12 feet wide and 11 feet high. (Upper Photograph 1, plate B.) Near the top of the incline another small culvert was also built. These openings sufficed to carry off water during the rainy seasons of 1910 and 1911, and apparently no anxiety was felt.

About 3 P.M. on the 11th July heavy rain fell. At Loyabad, 8 miles distant to the east, 3·20 inches were registered, most of which fell between 3 and

4-30 P.M. From all accounts the fall was heavier than this to the west. Eye-witnesses at Phularitand state that a rush of water came in a wave from the south and rushed down the incline. The rush was probably initiated by the bursting of a small tank about a quarter of a mile away to the south. This tank measured 225′ × 150′ and the breach in the bund was 3 feet deep. The water escaping, which flowed through the two small bridges at A and B, would be about 600,000 gallons or only one-thirteenth of the quantity which flowed into the mine. This alone was therefore insufficient to account for the inrush, but the effect of the tank bursting at a time when the ordinary rainfall was so heavy was that the bridge, at C, in the embankment was unable to carry off the water, with the result that it was dammed back and rose to such a height that, at about 5 P.M., just as the day shift of 36 workpeople was about to cease work, a small bank was scoured, as shown on plate C, and it rushed down the incline into the mine. The whole of the workings were filled within a period of from 20 to 25 minutes, as estimated by the manager. The quantity of water which entered the mine was, however, estimated at nearly 8 millions of gallons or 35,000 tons, and, assuming the water to have flowed into the mine in a stream 4 feet deep and 10 feet wide, it would take about 70 minutes to fill the workings. This is a considerable discrepancy in time.

The flood level at a bridge half a mile down stream is shown on the lower photograph on plate B.

Of the 15 persons at work in the galleries on the east side, 12 contrived to escape by the help of the haulage rope, which fortunately had previously been lowered into the mine and was lying in the middle of the road. Without the assistance thus afforded it is unlikely that many of them would have been able to make headway against the swift current. Several of them received cuts and bruises from stones, which were carried along by the flood. Of the 22 persons working in the west galleries, 2 only were able to fight their way to safety, by pulling themselves along hand over hand on the pump delivery pipes.

Owing to delay in the receipt of information of the disaster, Mr. R. R. Simpson, the Inspector of Mines for No. 1 Circle, did not reach the mine until the morning of the 13th, or 41 hours after the occurrence. The managing agent, the agent and the consulting mechanical engineer arrived at about the same time.

The level of the water in the incline was then 17 feet below the surface, but, from the statement of the manager, it appears that after the inrush the water rose in the incline to within about 7 feet of the surface. This level is considerably higher tha nthe roof of the highest gallery in the mine. From this fact the Company's officials concluded that it was certain that all those imprisoned must have been drowned. They did not propose to commence pumping out the water until the arrival of a pump from Chora in the Raniganj coal-field. This pump, although despatched from Chora on the 15th, did not reach Phularitand until the 22nd or 11 days after the inrush.

After a study of the plan of the workings the Inspector came to the conclusion that there was good reason to hope that air compressed in the rise workings might artificially lower the water level sufficiently to permit possible survivors to remain there in safety. Levels taken subsequently show that the water in the incline rose to a height of 16 feet above the highest flood level in the mine, but dropped 10 feet by the 13th due to the escape of air. He represented strongly therefore that pumping operations should be immediately commenced, and suggested that a pump then at work in No. 13 seam should be installed at No. 2 incline. He also requested that a second pump should be brought from a neighbouring mine. The pump was brought from No. 13 seam and started working early on the morning of 14th July. He visited the mine again on the 15th and 17th idem and was compelled to complain that no effort was being made to fit up another pump. At his request a pulsometer was obtained from a neighbouring mine but it was not in order and could not be set to work.

On the 19th instant, 8 days after the accident, the water had been lowered to a point about one foot below the roof of the first east gallery and at 2 P.M.

shouts were heard, and after some little difficulty 2 survivors (man and wife) were assisted out through a depth of 5 feet of water. These persons although weak were not emaciated. They were able to walk and to answer questions intelligently. They recovered completely within a few days, and are now working in the same mine. There is no doubt that they had been imprisoned in a cushion of compressed air.

On the following day the Inspector again visited the mine and found that another pump was installed, but not being in good order it was of little or no service. An exploration of the east workings proved that there were no other survivors on that side. On the 22nd the pump from Chora arrived and was set to work. By the 23rd the water was lowered sufficiently to permit of the exploration of the west workings, and in the first rise gallery, within 30 feet of the incline, 16 bodies were found in an advanced state of decomposition. Identification was impossible, but a *post-mortem* examination by the Assistant Surgeon proved that in all cases death was due to drowning, soon after partaking of food. As the level of the water lowered, other bodies were found, the total number drowned being 12 males and 11 females.

The accident was due to misadventure. I should myself have considered the bridge opening sufficiently wide to carry off the rainfall. The event has, however, proved otherwise.

Those responsible were fortunate in that such pumping operations as were carried on did, as a matter of fact, save the lives of such persons who could possibly have been saved.

Several precautions, notably the constructing of a second bridge at C, 6 feet wide, alongside the first one, the building of a brick wall at the incline and the making of another incline outlet from the workings have been taken since, to avoid another such calamity. In addition, it has been arranged that the accumulation of rain flood water shall be carefully watched during the ensuing monsoon.

Section IV.—Prosecutions and additions to the Act.

PROSECUTIONS.

Judgment was given in the following prosecutions during the year; unless otherwise stated the rules referred to are rules issued under Notification No. 864-68-20, dated 10th March 1904, made under section 20 of the Indian Mines Act.

In the last annual report an account was given of a fatal accident by haulage at the Lakorka Coal Company, Limited's Lakorka coal mine. It was stated that proceedings had been instituted against the manager for not providing manholes within the proper distances. This omission constituted a breach of rule 8, and the case was taken under section 22 (*3*) (*e*) read with the above rule. It was not contended that the loss of life was due to the omission. The manager pleaded guilty and was fined Rs. 20, or a fortnight's simple imprisonment.

The part-owner and the manager of the New Kusunda Coal Company, Limited's New Kusunda coal mine were prosecuted under section 22 (*3*) (*e*) read with rules 4, 7 and 14, for not keeping up a daily report book, for not fencing unused galleries, and for not producing an adequate amount of ventilation. The Company had been previously warned. Both pleaded guilty. The part-owner was fined Rs. 50 or one month's simple imprisonment and the manager was fined Rs. 75 or one month's simple imprisonment.

The manager of the Empire Coal Company, Limited's Sudamdih coal mine was prosecuted under section 22 (*3*) (*e*) read with rule 4 (*b*), for not recording

daily inspections, the duty of which he had taken upon himself. The case arose out of a fatal accident, No. 35 on the list, described in section III of this report. He pleaded not guilty, alleging that the pit in question was not a mine as it did not extend to more than 20 feet below the adjacent ground. He admitted that the original excavation was 40 or 50 feet deep, but pleaded that he was working at a point not 20 feet deep. The Court did not accept this plea, but considered the offence a technical one. He was fined Rs. 10 or one week's simple imprisonment.

The manager of the Empire Coal Company, Limited's Sudamdih coal mine was prosecuted under section 22 (*1*) (*e*) read with rule 7, for not fencing an unused gallery. The case arose out of a fatal accident, No. 107 on the list. He pleaded guilty and was fined Rs. 50 or two weeks' simple imprisonment.

The part-owners (2) of the Tentulia Colliery Company's Tentulia coal mine were prosecuted under section 22 (*3*) (*e*) read with rules 3, 7, 8, 19 and 20 for not securing the roof and sides, for not fencing unused galleries, for omission to provide signals and manholes on a haulage incline, for not fencing shafts and an incline, and for not fencing dangerous machinery. They had been previously warned about fencing unused galleries. They pleaded guilty and each was fined Rs. 20 or one month's simple imprisonment.

The owner of Babu S. P. Dey's Egarcoor coal mine was prosecuted under section 22 (*2*) (*b*) read with rule 1 of Notification No. 11793—103 of 30th December 1908, made under section 20, for omitting to furnish a correct annual return form by the 1st of February. He was fined Rs. 50 or one month's simple imprisonment.

On the same count the owners (2) of Messrs. Dutt Kabra Coal Company's Begunia coal mine were fined Rs. 25 each or one month's simple imprisonment.

The owners and manager of the Baliram Coal Company's Ghusik and Srikristopur coal mine were prosecuted under section 22 (*3*) (*e*) read with rules 2 (*e*), 9 and 19, for failing to provide guides at a shaft, for failing to keep a proper plan, and for failing to fence a shaft when the trolley was moved away from it. They had been warned repeatedly. The manager pleaded guilty in regard to the plan, but said he did not consider guides necessary, as the shaft was connected with another shaft, and that he considered the shaft was fenced. These pleas were overruled and he was fined on all three counts, Rs. 100 in all. The case against the owners was withdrawn.

The manager of the Lodna Colliery Company, Limited's Chasnala coal mine was prosecuted under section 22 (*3*) (*e*) read with rule 4 (*b*) for failing to maintain a daily report book. He pleaded guilty. It was admitted by the prosecution that the inspections had been made and that the colliery was thoroughly well managed. He was fined Rs. 10 or one day's simple imprisonment.

The owner of Messrs. R. A. Mucadum & Sons' Chanda coal mine was prosecuted under section 22 (*3*) (*e*) and (*2*) (*b*) read with rules 7 and 19, and rule 1 of Notification No. 11793—103, dated the 30th December 1908, respectively, for not fencing unused galleries, for not fencing the top of a quarry and

the top of an incline, and for not submitting a correct annual return by the 1st February. He pleaded guilty and was fined Rs. 45 on the first count, and Rs. 15 on each of the other counts, making Rs. 75 in all.

The owner and manager of Babu Gopal Mahaton's Chilingia mica mine were prosecuted under section 22 (*3*) (*c*) read with section 16, for failing to report the opening of the mine, which was working before the Indian Mines Act came into force. The owner pleaded limitation, which was not accepted by the Court. He then withdrew this plea, and pleaded guilty, but it was pleaded in extenuation (*a*) that it was the first prosecution of the kind and (*b*) that he had taken over the mine as a going concern. He was fined Rs. 10 and the case against the manager was withdrawn.

The owner and manager of Babu Ganga Singh's Laharia mica mine were prosecuted on the same count. The owner was fined Rs. 10. The manager was reported to be deceased and the proceedings against him were dropped.

The agent and manager of the Bengal Iron and Steel Company Limited's Noonoodih coal mine were prosecuted under section 22 (*3*) (*e*) read with rule 8, for failing to provide a manhole in a haulage incline. The case arose out of a fatal accident, No. 101 on the list. The defence taken by the agent was that he was not the agent. The judgment was as follows :—" It is admitted by the manager that accused has inspected the mine under the instructions of the general manager. The manager would not be inspected by a subordinate, and therefore I can only conclude that accused is the superior of the manager for the time being, while he is inspecting the mine, and his directions must be obeyed by the manager. If this is not the case, the inspection would seem to be a futile proceeding. I find accused guilty of a breach of rule 8 under section 20 of the Indian Mines Act."

In the case of the manager the defence taken was that the haulage incline was not used as a travelling road. The judgment was as follows :—" The whole question turns on whether a haulage slope was used as a travelling road or not. If used as a travelling road, rule 8 under section 20 of the Indian Mines Act requires that manholes should be provided every 60 feet at least. The manhole in this case was 89 feet from the top of the slope. For the defence it is contended that the haulage slope was not used as a travelling road, and that the travelling road ran parallel. A man, however, was killed on the haulage slope on June 4th and two women in February. The Inspector of Mines himself saw people using the haulage slope, and there can be no doubt whatever that it was so used, though doubtless the mine authorities did not recognise it. It was their duty, however, to see that the haulage slope was not used as a travelling road, or if so used, was properly provided with manholes. The accident in February should have provided the necessary lesson. I find accused guilty of the breach of rule 8 under section 20 of the Indian Mines Act." The agent and manager were each fined Rs. 30.

The manager of the Eastern Coal Company Limited's Bhowra coal mine was prosecuted under section 22 (*1*) (*e*) read with rule 15, for failing to work exclusively in a particular part of the mine with safety lamps. The case arose out of a fatal accident, No. 1 on the list, described in section III of this report. It was admitted by the prosecution that he was temporarily acting as manager for the regular manager, who was on furlough. He pleaded guilty and was fined Rs. 50.

The owner and manager of Babu Umesh Chandra Bhattacharj's Pandedih coal mine were prosecuted under section 22 (*3*) (*e*) read with rules 4, 10 and 19, for failing to maintain a daily report, failing to keep a plan of the

workings at the mine, and failing to fence the tops of inclines. Both pleaded guilty. The owner was fined Rs. 10 on each charge, or Rs. 30 in all, and the manager was fined Rs. 5 on each charge, or Rs. 15 in all.

The owner of Babu Bidhu Sekhar Banerji's Sabanpur coal mine was prosecuted under section 22 (*2*) (*b*) and under section 22 (*3*) (*e*) read with rule 19 for failing to give notice of an accident which occurred at a disused incline, and for failing to fence the said incline. He pleaded guilty and was fined Rs. 50 on the first charge and Rs. 25 on the second, or Rs. 75 in all.

The owners (3) and the manager of the Central Tentulia Coal Company's Tentulia coal mine were prosecuted under section 22 (*3*) (*e*) read with rules 1, 3, 7, 19 and 20, and under rules 46 and 51 of Notification No. 2968-82, dated the 21st April 1906, for failing to make proper arrangements for persons to descend or ascend a second outlet, failing to secure roof and sides, failing to fence unused galleries, failing to properly fence a shaft and an incline, and failing to fence a hauling engine, for (owners only) allowing the mine to be managed without a manager qualified according to the rules, and for allowing more than one mine to be managed by the same manager. All of them pleaded guilty and the owners were fined Rs. 100 each, or two months' simple imprisonment, and the manager was fined Rs. 40 or one month's simple imprisonment.

Two permits granted to managers of small mines were cancelled during the year on account of mismanagement disclosed by inspections.

Section V.—General Remarks.

HEALTH AND SANITATION.

The Jharia Sanitation Committee continued during the year to supervise operations in connection with sanitation in Jharia. In Jharia town the first cases of cholera were reported on 27th May, and between this and 14th June there were 41 cases—all fatal. An outbreak occurred almost simultaneously at the Katras end of the field, 4 cases occurring between 21st and 25th. In the same week 15 cases with 10 fatal results occurred on a colliery about 2 miles to the west of Jharia, and the next serious outbreak was on the 30th June at a village at the west end of the field. No reliable information was available but the Sanitary Inspector estimated there were 30 fatal cases. With the full break of the rains, which sluiced out filthy water courses, increased existing sources of water-supply and provided supplies of good water where none existed, cholera soon died out and there were no further serious outbreaks after 30th June.

Altogether there were known to be 66 deaths from cholera at coal mines in Bihar and Orissa and 62 at coal mines in Bengal. Seven deaths occurred in the Jharia coal-field from small-pox.

One case of plague was found in the Jharia bazar on 20th January and, on investigation, it was proved that the patient had come from Dhanbaid. Although rats were dying on collieries adjacent to the Jharia bazar, no other case of plague was reported. The infection appears to have spread in a north-westerly direction, and reports of rats dying were reported to the Sanitation Committee from Bhuggutdih, Nayadi, Kustore and Kendwadih. From the date on which it was first observed that rats were dying in the Jharia bazar three months elapsed, when a similar state of affairs was reported from Kendwadih bazar, which lies about 4 miles from Jharia. Several dead rats were examined at the request of owners of the bazar by Dr. F. T. Simpson, who reported the

B. Pestis in great number with the result that the bazar was at once totally evacuated. About three days after evacuation, a boy died in the empty bazar, having in all probability been brought there by his friends. Rat catching was resumed on 1st November 1912, and at the close of the year no further case of plague had been reported.

Malaria was again reported from the mines at Tavoy in Burma and is partly attributed to the impermanent nature of the buildings in which the coolies are housed. In this connection the Deputy Commissioner is submitting proposals to relax the conditions under which licensees and lessees are allowed to cut timber.

A few cases of plague occurred in the early part of the year at Mohpani coal mine in the Central Provinces. The outbreak was, however, stamped out in March, owing to the special measures taken by the manager to get his people inoculated. There were 6 deaths.

Plague and cholera were also reported from Ballarpur coal mine in the Central Provinces. There were 21 deaths from plague and 24 from cholera.

Malaria was reported from the Khost coal mines in the autumn, and from an area in the Madras mica mines. Plague and cholera were reported from the manganese mines in the Nagpur district, and cholera from the manganese mines in the Chhindwara district, in the Central Provinces.

The total rainfall at Jealgora in the Jharia coal-field was 44·69 inches, or 2·87 in excess of the previous year. At Giridih it was 54·86 inches, the average of the last five years being 54·37. At Dishargarh in the Raniganj coal-field it was 37·64 inches.

AMBULANCE WORK.

I am very pleased to report that this movement again made considerable headway during the year under report. The Central Committee was constituted as follows: The Chief Inspector of Mines in India (President), Messrs. S. Heslop and R. J. Browne (Vice-Presidents), the Collector of Burdwan, the Deputy Commissioners of Hazaribagh and Manbhum, the Sub-divisional Officers of Asansol and Dhanbaid, the Inspectors of Mines in India, Messrs. A. A. Agabeg, F. J. Agabeg, T. Adamson, R. G. M. Bathgate, R. J. Barrowman, E. S. Bennertz, H. M. Bull, G. Crawford, G. H. Fairhurst, Glen George, W. Hutton-Williams, J. S. Kean, P. Keelan, G. C. Lathbury, A. Mackay, J. Mackintosh, G. Miller, Robert Mitchell, C. Nairne, F. Owen, E. M. Patterson, W. J. Rees, A. S. Thomson, and E. S. Tarlton.

The names of those who generously subscribed last year were given in the last report, and subscriptions received during the current year will be published in the next one.

Ten classes for Indians and Europeans were held at seven local branches, *viz.*, Charanpur, Dishargarh, Jharia, Kusunda, Mugma, Raniganj and Sijua, and were attended by 493 students. Of these 162 were examined with the result that 151 passed. Certificates of proficiency in "First Aid" were gained by 149 candidates and 2 gained vouchers. Classes were also started for instruction in the vernacular and proved a great success. It is very gratifying to note the increase in the number of cases in and about the mines treated by first

aiders before the arrival of the doctor. This, more than anything, goes to justify the inception of these classes.

The committee has under consideration a scheme for presenting medals instead of certificates of proficiency to successful Indian candidates.

The formation of ambulance brigades at suitable stations for members of the classes who have made themselves proficient in "First Aid" is receiving the attention of the committee. Enrolment will entitle the trained men to wear uniforms approved by the King-Emperor himself and they will qualify after a certain number of years' service for a decoration given by the King-Emperor exactly similar to the Volunteer Decoration.

SIBPUR COLLEGE MINING DEPARTMENT.

Mr. E. H. Roberton, the Professor of Mining at Sibpur College, has reported that the number of students on the roll at the beginning of session 1912-13 was seventeen, of whom twelve were enrolled in Course I and five in Course II. At the diploma examination held in March 1912 five were successful, one being a special student. At the annual examination held at the same time to qualify students to pass from Course I into Course II, only three were successful, one of whom was a special student. Two other special students, however, having passed in mining subjects, were permitted to study in Course II.

It was mentioned last year that the special scholarships, formerly awarded annually, had been abandoned, but that in spite of this four young men had relinquished their means of livelihood and joined the mining department of the college at their own expense. Unfortunately they found the cost of living near Calcutta higher than they expected, and before the long vacation two of them decided to leave the college, as they saw that their resources could not possibly hold out to the end of the two years' course. A third remained up to the end of the camp period, and then decided to withdraw his name, as his savings would not keep him to the end of the course, although two small college scholarships of six rupees each were diverted to the use of the two special students remaining at the time. Thus only one special student is left. A proposal is on foot to renew the special scholarships in a modified form, which it is to be hoped will be successful, as there is no doubt of the ambition and high endeavour of these young men.

The annual mining camp was pitched in November and December in the Jharia district, where much instructive and useful work was got through. Visits were made to many important collieries, including Jamadoba, where an up-to-date screening plant has recently been erected; Barari, where the efforts of the management to cope with a severe outbreak of fire have been so successful; Hariladih, an object lesson in shaft sinking under heavy water difficulties; Kustore, with its pressure filters, sanitary appliances and electrical installation; Giridih, where excellent sinking operations with guided kibble and water bucket are being carried on, and where the well-equipped workshops and the electric underground pumps and haulages were inspected. Field geology was studied at Bhowra, Goluckdih, and Kankani. Surface and underground surveys were made of portions of Lodna and Benahir collieries.

The Students' Mining Society is still flourishing, and has nearly completed seven volumes of the "Journal." The offer of an annual prize of Rs. 30 to be given to the student who compiles the best notebook during the camp period was made by Mr. C. H. McCale, Manager of the Damuda Coal Co. Ld.'s collieries and an external member of the Society. This generous prize of Mr. McCale's is much appreciated. It gives the students a special inducement to exercise to the full their powers of observation and expression.

The apparatus pertaining to the Mining Department has been added to during the past year, a small diamond boring outfit, a polarising lantern and microscopes, and a number of mineral specimens and microscope and lantern slides having been procured. The museum attached to the department has been enlarged, and a new shed is being built, in which the Giridih headgear model will be housed, and which will act as a repair shop, and a storehouse for samples in bulk and other sundries.

MINING EDUCATION IN THE BENGAL COAL-FIELDS.

One meeting of the Mining Educational Advisory Board was held during the year.

The lecturers appointed for the session 1912-13 were as follows:—

Jharia Centre—Mr. J. Wilson, B.Sc., Sijua Centre—Mr. B. Starks-Field, Charanpur Centre—Mr. H. C. Read, B.Sc., and Dishargarh Centre—Mr. C. Ashcroft, F.G.S.

The lecturers of the session 1911-12 report that the total number of names on the register was 260. This is an advance of 23 on the numbers of the previous year. The average number of students who attended the Courses was 20·15 per lecture, 75 students (34 Europeans and 41 Indians) made 50 per cent. or more of the possible number of attendances and thus became eligible candidates for the sessional examinations. These figures are practically the same as for the previous year.

Complaint was made of the difficulty in teaching mining to students who were deficient in the knowledge of Arithmetic and elementary Mathematics. All the lecturers endeavoured to induce students to work at home, in addition to attending the lectures.

The sessional examinations were held simultaneously on the 3rd June 1912 at Jharia, Charanpur and Dishargarh, the Sijua students being examined at Jharia, the examiners being Professor E. H. Roberton, M.Sc., and Mr. R. R. Simpson, M.Sc. Of the 75 eligible candidates, only 25 presented themselves for examination and 16 candidates (8 Europeans and 8 Indians) were successful in obtaining the necessary number of marks to qualify for certificates. In the previous year 36 candidates presented themselves and 18 were successful.

The Examiners reported as follows:—

"As compared with last year very little improvement in the quality of the students' work can be detected. The majority of the candidates are ignorant of the elements of drawing and are unable to sketch a simple piece of machinery. Other defects are failure to understand the meaning of definitions, incoherency of expression, faulty mensuration and carelessness. This could in fact be remedied by inducing students to pay more attention to home work."

There is no doubt that deficiency in ordinary, if not primary, education, in the case of many students prevents them assimilating the lectures on mining. It is impossible to learn a particular art without at any rate a certain knowledge of the other arts, and of the sciences, upon which that art is based. The consideration of the whole question of mining education generally in the coal-fields has been retarded, owing to the uncertainty as to the future of the Sibpur Engineering College. It is however understood that a final decision on this matter will be come to soon, and, whatever the decision is, the necessity of a more comprehensive scheme of local technical education must be met, if Indian and Anglo-Indian managers are to take their proper place in the rapid development of coal mining in India.

MINING AND GEOLOGICAL INSTITUTE OF INDIA.

The total membership of the institute at the end of the year, including subscribers, was 303. Four meetings were held during the year. In addition to the above meetings, several meetings of the Jharia and Raniganj coal-fields branches have been held, at which interesting and instructive discussions have taken place. The Government prize for the best paper read during the year was divided between Messrs. E. C. Agabeg and A. Mort.

BOARD OF EXAMINERS.

No change is to be reported among the non-official members of the Board. The Board therefore was the same as that of last year, *viz.*, Mr. G. F. Adams, Chief Inspector of Mines in India (*Ex-officio* President), and Messrs. S. Heslop and R. J. Browne.

Four meetings were held by the Board during the year.

There were five applicants for first class Indian certificates of competency in lieu of English certificates, all of whom were furnished with Indian certificates. There were five applicants for second class certificates of service. Two of them were granted certificates.

An examination for certificates of competency as colliery managers was held at Dhanbaid in the office of the Department of Mines on the 21st and 22nd February 1912, at which 25 candidates competed for first class and 58 for second class certificates. Out of the above numbers, only 4 were successful in obtaining first class, and 11 second class, certificates.

The non-official examiners at the above examination were Messrs. T. Adamson and F. Owen. Mr. R. R. Simpson being the official examiner.

MINING BOARD.

No meetings of the Mining Board were held during the year.

OFFICIAL DUTIES IN 1912.

Mr. G. F. Adams was Chief Inspector of Mines in India.

Mr. R. R. Simpson was Inspector of Mines for No. 1 Circle. From the 27th September to the 30th November he had charge of Nos. 2 and 3 Circles in addition to his own duties.

Mr. G. C. Leach was Inspector of Mines for No. 2 Circle. From the 2nd March till the 26th September he had charge of No. 3 Circle in addition to his own duties. He was granted privilege leave for three months, combined with leave on medical certificate for nine months from the 27th September 1912.

Mr. C. J. E. David was Inspector of Mines for No. 3 Circle. From the 1st December to the end of the year he was in charge of No. 2 Circle in addition to his own duties. He was granted privilege leave for one month, and leave on medical certificate for 8 months from the 2nd March 1912.

The Department was therefore shorthanded for the greater part of the year. I wish to thank Mr. R. R. Simpson for the manner in which he kept up the office work and necessary field work of all three circles during the absence of both Mr. G. C. Leach and Mr. C. J. E. David.

I have the honour to be,

SIR,

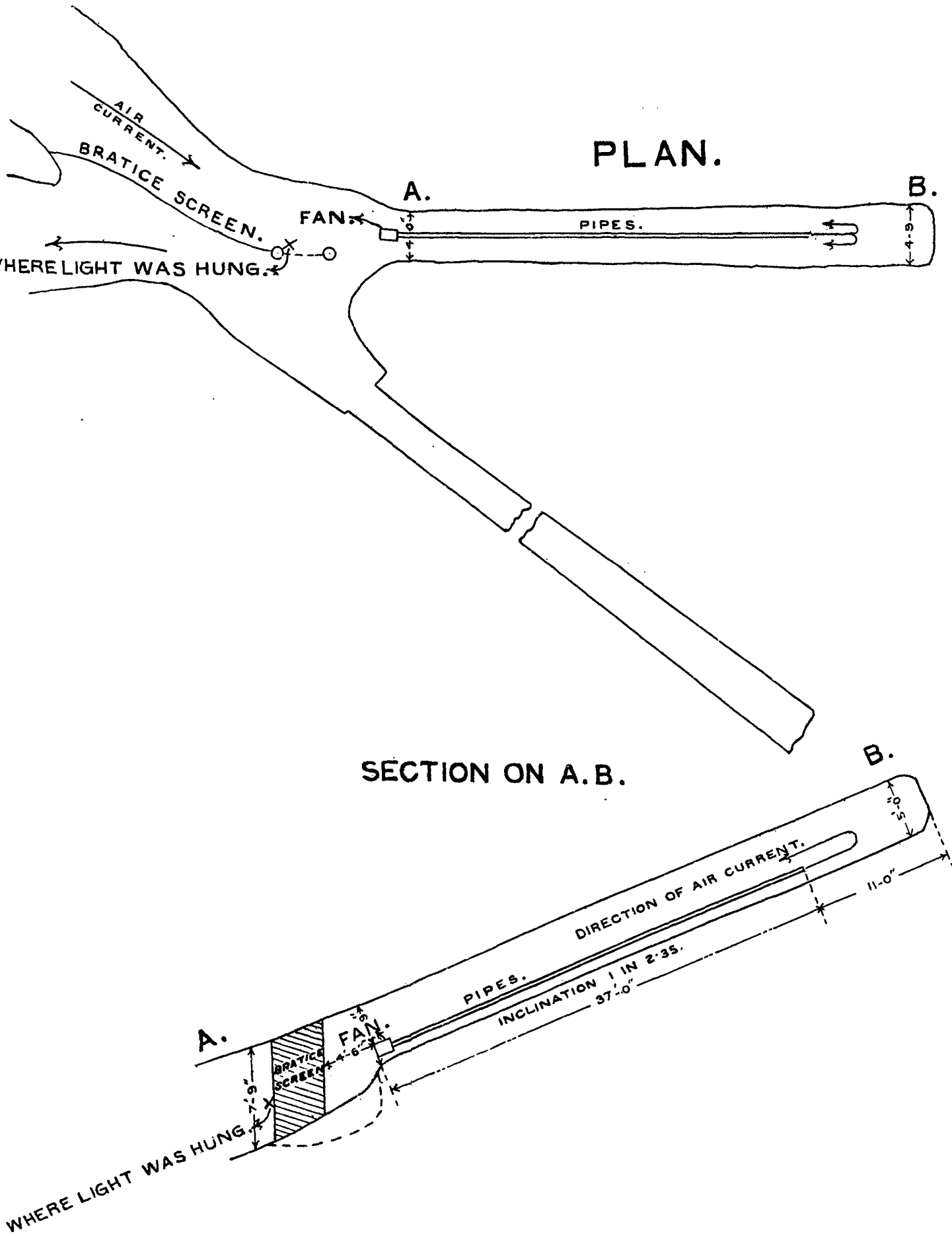
Your most obedient Servant,

G. F. ADAMS,

Chief Inspector of Mines in India.

PLAN ILLUSTRATING REPORT ON
FATAL ACCIDENT BY EXPLOSION OF FIREDAMP
AT
THE EASTERN COAL Co., LTD'S BHOWRA MINE

SCALE 1 INCH=10 FEET.



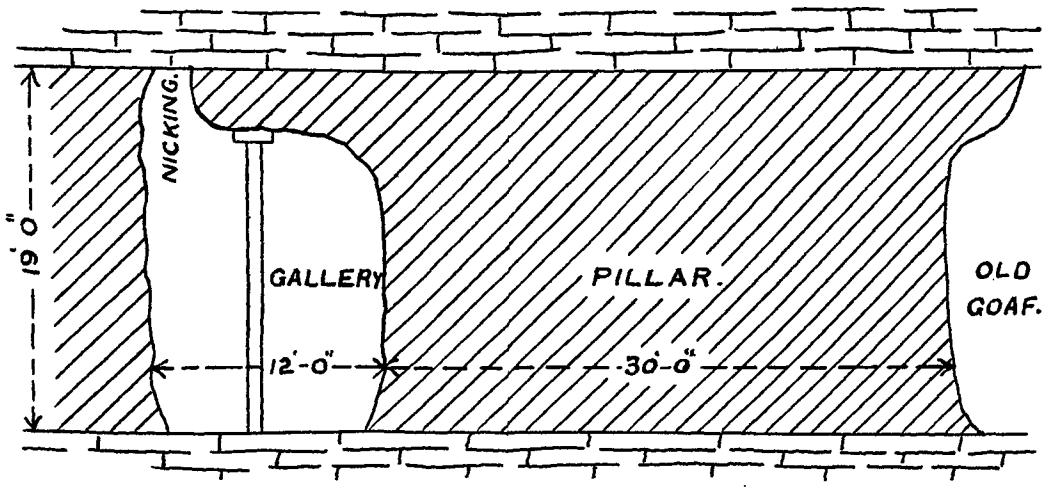
PLAN ILLUSTRATING REPORT ON

FATAL ACCIDENT BY FALL OF ROOF

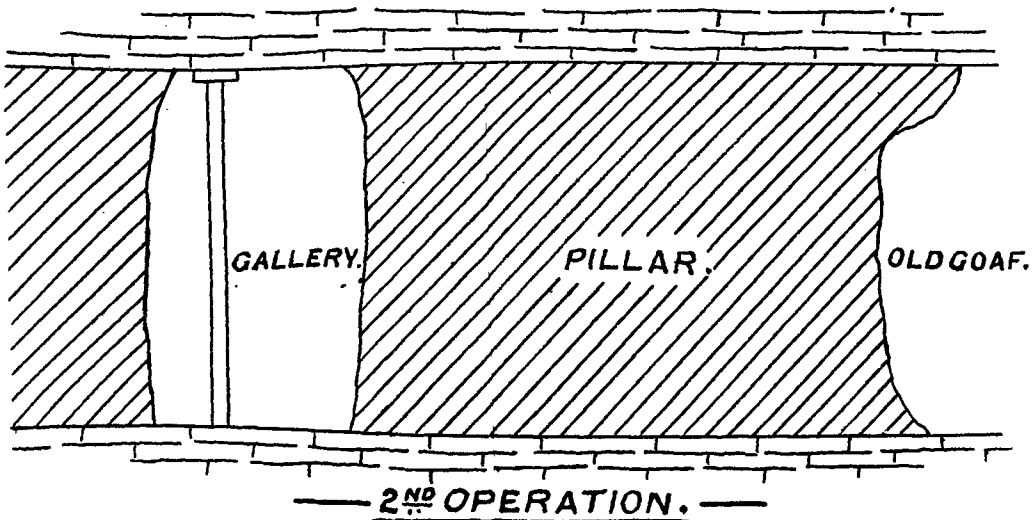
AT

THE KATRAS JHERRIA COAL Co., LTD'S SIBPUR MINE

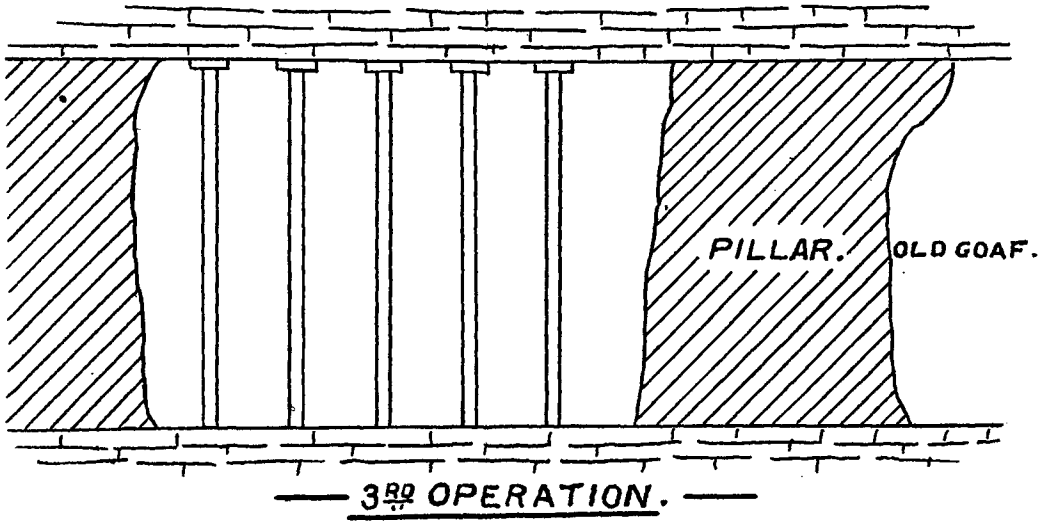
SCALE 1 INCH=10 FEET.



1ST OPERATION.



2ND OPERATION.



3RD OPERATION.

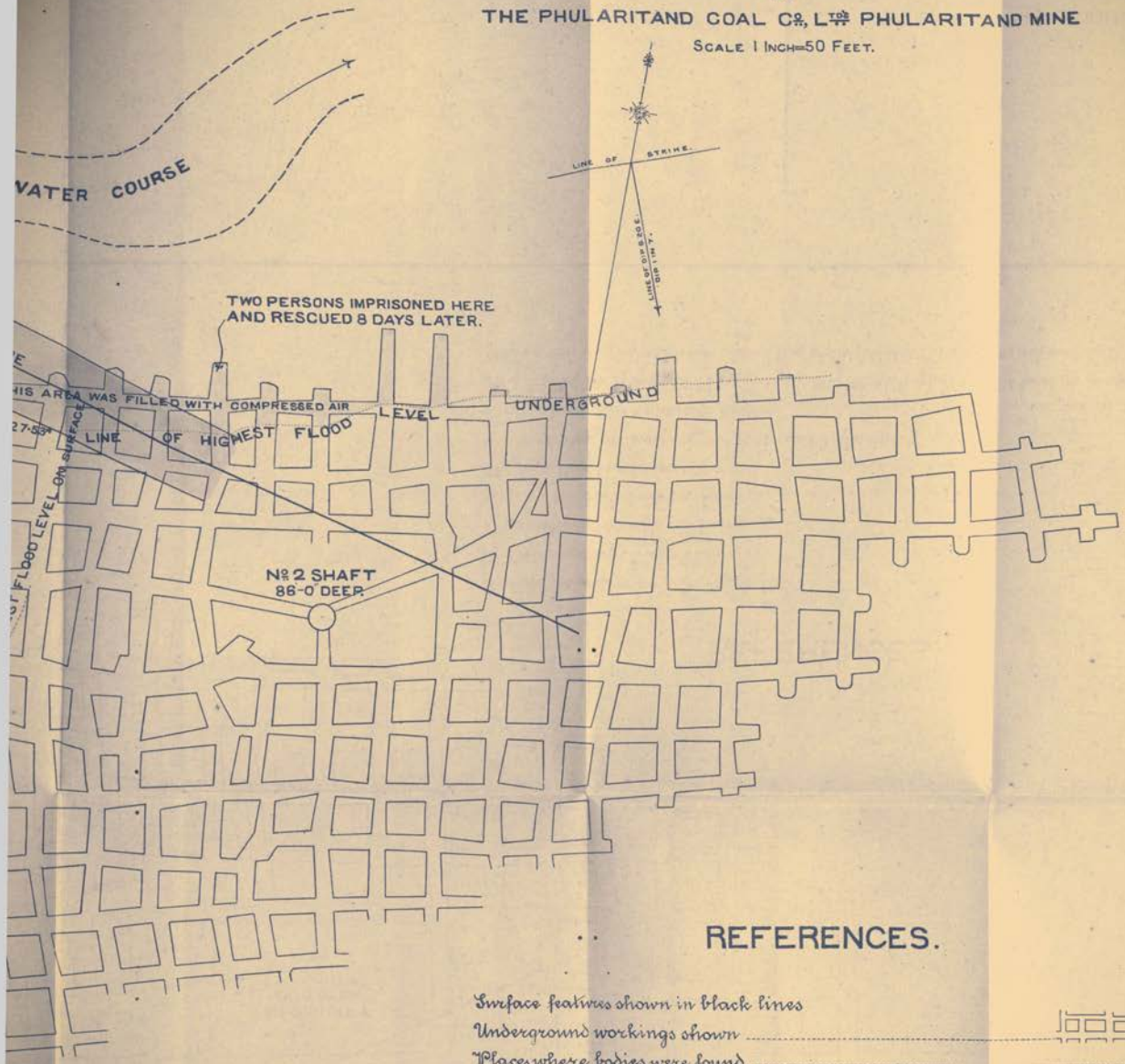
PLAN ILLUSTRATING REPORT ON

FATAL ACCIDENT BY IRRUPTION OF WATER

AT

THE PHULARITAND COAL Co., Ltd. PHULARITAND MINE

SCALE 1 INCH=50 FEET.


WATER COURSE
LINE OF STRIKE.
LINE OF DIP.
TWO PERSONS IMPRISONED HERE AND RESCUED 8 DAYS LATER.
THIS AREA WAS FILLED WITH COMPRESSED AIR
LINE OF HIGHEST FLOOD LEVEL UNDERGROUND
LINE OF HIGHEST FLOOD LEVEL ON SURFACE
No 2 SHAFT
86-0 DEEP

REFERENCES.

Surface features shown in black lines

Underground workings shown

Places where bodies were found

Highest flood level on surface

Highest flood level underground

Contour lines on surface one foot apart shown

Embankments on surface shown

R. L. Relative level. Datum line of 50 feet at highest flood level on surface.

Blue wash in the galleries shows the area filled with compressed air

LINE OF HIGHEST FLOOD LEVEL ON SURFACE.
R.L. 18·84
R.L. 50·00
TRAM LINE
BRIDGE.
A
B.
C
PADDY FIELDS
PADDY FIELDS
WALLED SUBSIDENCE ON OUTCROP OF No 13 SEAM.
R.L. 18·44
R.L. 16·61
LINE OF HIGHEST FLOOD LEVEL ON SURFACE.
No 3 INCLINE ON No 13 SEAM.
ASH HEAP
COKE OVEN
R.L. 18·00
R.L. 50·00
No 2 INCLINE ON No 12 SEAM.
COKE OVEN
BRIDGE
ENGINE HOUSE.
TRAM LINE
R.L. 27·53
THIS AR
LINE OF HIGHEST FLOOD LEVEL ON
WATE

PLATE ILLUSTRATING REPORT ON FATAL ACCIDENT IN A SHAFT AT THE LODNA COLLIERY CO. LTD'S SREEPUR MINE.

PHOTOGRAPH No. 1.

PHOTOGRAPH No. 2.

PLATE ILLUSTRATING REPORT ON FATAL ACCIDENT BY IRRUPTION OF WATER AT THE PHULARITAND COAL CO. LTD.'S PHULARITAND MINE.

PLATE ILLUSTRATING REPORT ON FATAL ACCIDENT BY IRRUPTION OF WATER AT THE PHULARITAND COAL CO., LTD.'S PHULARITAND MINE.

APPENDIX I.

STATISTICS OF MINES AND MINERALS.

Table No. 1.

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1912.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Total output.	Average number of persons employed daily in and about the mines.								Grand total below and above ground.
								Below ground.				Above ground.				
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
							A.—COAL.									
							Tons									
Bihar and Orissa	Hazaribagh — Bokaro-Ramgarh	10	...	10	18	22	5,310	42	69	11	122	44	68	2	114	236
	Hazaribagh — Jharia	1	...	1	...	...	110	3	...	...	3	25	...	...	25	28
	Hazaribagh — Giridih	7	5	2	5	10	730,530	3,323	1,400	...	4,723	1,807	996	47	2,850	7,573
	Manbhum — Jharia	235	115	120	218	384	7,653,342	22,355	17,526	262	40,143	14,614	7,372	1,285	23,271	63,414
	Manbhum — Raniganj	71	9	62	37	55	635,764	2,543	1,084	7	3,634	1,097	652	41	1,790	5,424
	Sambalpur, Hingir Rampur	1	1	...	...	...	21,314	273	...	...	273	176	19	...	195	468
	Sonthal Parganas — Raniganj	2	...	2	...	...	2,375	10	8	...	18	5	5	...	10	28
	Sonthal Parganas — Rajmahal	1	...	1	...	...	2,775	7	9	2	18	4	6	2	12	30
	Palamau, Daltonganj	1	1	...	1	2	71,917	165	176	15	356	252	35	47	334	690
	Total	329	131	198	279	473	9,123,437	28,721	20,272	297	49,290	18,024	9,153	1,424	28,601	77,891
Bengal	Burdwan, Raniganj	162	135	27	101	175	4,296,867	16,345	7,560	199	24,104	8,078	4,204	318	12,600	36,704
	Birbhum „	1	...	1	...	...	1,728	10	6	...	16	7	2	...	9	25
	Bankura „	2	...	2	1	1	7,534	55	35	...	90	4	5	...	9	99
	Total	165	135	30	102	176	4,306,129	16,410	7,601	199	24,210	8,089	4,211	318	12,618	36,828

Table No. 1—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1912.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines: Worked by mechanical power.	Number of mines: Not worked by mechanical power.	Number of mines inspected during the year: Number of mines inspected.	Number of mines inspected during the year: Number of inspections.	Total output.	Average number of persons employed daily in and about the mines: Below ground: Adult males.	Below ground: Adult females.	Below ground: Children (under 12).	Below ground: Total below ground.	Above ground: Adult males.	Above ground: Adult females.	Above ground: Children (under 12).	Above ground: Total above ground.	Grand total below and above ground.
							A.—COAL—*contd.* Tons.									
Central Provinces	Chhindwara, Pench Valley	4	2	2	...	...	90,722	401	212	10	623	115	48	16	179	802
	Narsinghpur, Mohpani	1	1	...	...	...	56,857	475	217	...	692	319	54	...	403	1,095
	Chanda, Ballarpur	1	1	...	...	...	86,417	499	...	...	499	134	...	...	134	633
	Total	6	4	2	...		233,996	1,375	429	10	1,814	598	102	16	716	2,530
Panjab	Jhelum	5	...	5	7	9	33,192	460	...	...	460	204	...	16	220	680
	Shahpur	2	...	2	1	1	3,617	90	...	...	90	110	...	...	110	200
	Mianwali	2	...	2	...	...	1,600	42	...	...	42	59	...	...	59	101
	Total	9	...	9	8	10	38,409	592	...	...	592	373	...	16	389	981
Assam	Lakhimpur	8	5	3	8	16	296,615	1,114	202	...	1,316	508	251	40	799	2,115

Baluchistan	Sibi	8	1	7	4	11	45,477	694	...	...	694	310	...	21	331	1,025
	Loralai	1	...	1	...	...	255	12	...	...	12	8	...	...	8	20
	TOTAL	9	1	8	4	11	45,732	706	...	...	706	318	...	21	339	1,045
North-West Frontier Province.	Hazara	1	...	1	...	...	50	2	...	...	2	...	...	...	...	2
	GRAND TOTAL (COAL) FOR 1912.	527	276	251	401	686	14,044,368	48,920	28,504	506	77,930	27,910	13,717	1,835	43,462	121,392
	" " OF PRECEDING YEAR.	450	276	174	362	704	12,048,726	43,783	24,579	505	68,867	24,803	11,454	1,474	37,731	106,598
	DIFFERENCE	+77	...	+77	+39	—18	+1,995,642	+5,137	+3,925	+ 1	+9,063	+3,107	+2,263	+361	+5,731	+14,794
							B.—MICA.									
							Cwts.									
Bihar and Orissa	Monghyr	15	...	15	...	...	576	215	146	2	363	142	117	42	301	664
	Hazaribagh	356	8	348	...	...	21,462	3,509	2,101	371	5,981	1,487	1,427	1,010	3,924	9,905
	Gaya	24	...	24	...	...	6,338	539	246	49	834	148	226	196	570	1,404
	TOTAL	395	8	387	...	...	28,376	4,263	2,493	422	7,178	1,777	1,770	1,248	4,795	11,973
Madras	Nellore	65	1	64	...	...	12,535	1,709	1,129	132	2,970	377	602	576	1,555	4,525
	Salem	2	...	2	...	...	108	24	2	...	26	10	36	16	62	88
	TOTAL	67	1	66	...	...	12,643	1,733	1,131	132	2,996	387	638	592	1,617	4,613

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STATISTICS OF MINES AND MINERALS—*contd.*

Table No. 1—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1912.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Total output.	Average number of persons employed daily in and about the mines.								Grand total below and above ground.
								Below ground.				Above ground.				
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
							B.—MICA—*contd.*									
							Cwts.									
Rajputana	Ajmer-Merwara	11	...	11	7	7	641	210	32	...	242	98	63	32	193	435
	GRAND TOTAL (MICA) FOR 1912.	473	9	464	7	7	41,660	6,206	3,656	554	10,416	2,262	2,471	1,872	6,605	17,021
	,, ,, OF PRECEDING YEAR.	488	15	473	115	117	31,686	6,081	2,733	394	9,208	2,105	2,307	1,954	6,366	15,574
	DIFFERENCE	—15	—6	—9	—108	—110	+9,974	+125	+923	+160	+1,208	+157	+164	—82	+239	+1,447
							C.—MANGANESE.									
							Tons.									
Central Provinces	Nagpur	18	3	15	...	...	125,230	1,194	906	5	2,105	323	240	29	592	2,697
	Bhandara	9	...	9	...	...	78,840	289	210	...	499	482	462	20	964	1,463
	Balaghat	8	...	8	...	...	104,581	1,119	638	42	1,799	217	205	15	437	2,236
	Chhindwara	2	1	1	...	...	16,517	88	78	...	166	35	22	1	58	224
	TOTAL	37	4	33	...	...	325,168	2,690	1,832	47	4,569	1,057	929	65	2,051	6,620
Madras	Vizagapatam	8	3	5	...	...	54,758	1,319	717	24	2,060	595	406	70	981	3 041

Bombay	Panch Mahals . . .	2	1	1	...	...	43,538	272	137	23	432	597	281	61	939	1,371
	GRAND TOTAL (MANGANESE) FOR 1912.	47	8	39	...	...	423,464	4,281	2,686	94	7,061	2,159	1,616	196	3,971	11,032
	" " OF PRECEDING YEAR.	44	5	39	23	38	441,426	5,347	3,387	128	8,862	1,785	1,103	134	3,022	11,884
	DIFFERENCE . . .	+3	+3	...	—23	—38	—17,962	—1,066	—701	—34	—1,801	+374	+513	+62	+949	—852
	D.—LIMESTONE.															
							Tons.									
Central Provinces . .	Jabalpur, Katni . . .	20	1	19	...	...	91,739	702	762	63	1,527	404	631	44	1,079	2,606
Panjab	Hoshiarpur	1	...	1	...	...	45	40	...	...	40	42	...	...	42	82
	GRAND TOTAL (LIMESTONE) FOR 1912.	21	1	20	...	...	91,784	742	762	63	1,567	446	631	44	1,121	2,688
	" " OF PRECEDING YEAR.	21	1	20	27	30	92,692	870	973	176	2,019	581	792	80	1,453	3,472
	DIFFERENCE . . .	...	...	...	—27	—30	—908	—128	—211	—113	—452	—135	—161	—36	—332	—784
	E.—SALT.															
							Tons.									
Panjab	Shahpur	1	...	1	...	...	5,486	18	16	4	38	...	...	...	...	38
	Jhelum	2	...	2	1	2	115,615	411	349	54	814	50	...	...	50	864
	Mianwali	1	...	1	1	2	10,132	52	...	16	68	...	...	...	...	68
	GRAND TOTAL (SALT) FOR 1912.	4	...	4	2	4	131,233	481	365	74	920	50	...	...	50	970
	" " OF PRECEDING YEAR.	4	...	4	...	...	124,603	454	349	54	857	33	...	...	33	890
	DIFFERENCE . . .	...	...	...	+2	+4	+6,630	+27	+16	+20	+63	+17	...	...	+17	+80

STATISTICS OF MINES AND MINERALS—*contd*

Table No. 1—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1912.

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								Below ground.				Above ground.				
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
							F.—GEMS.									
							(*a*) **Rubies.**									
Burma	Mogok				...	...	Carats. 250,987									
	Mogok	8	...	8	...	...	(*b*) **Sapphires.** 18,552	769	...	...	769	938	...	...	938	1,707
	Mogok						(*c*) **Spinels.** 53,706									
	TOTAL	8	...	8	..	...	323,245	769	...	...	769	938	...	...	938	1,707
Madras	Kurnool	1	...	1	...	...	(*d*) **Diamonds.** 2	7	5	..	12	...	...	...	...	12
	GRAND TOTAL (GEMS) FOR 1912.	9	...	9	...	...	323,247	776	5	...	781	938	...	...	938	1,719
	" " OF PRECEDING YEAR.	7	6	1	...	...	288,216	708	7	2	717	825	...	...	825	1,542
	DIFFERENCE	+2	−6	+8	...	...	+35,031	+68	−2	−2	+64	+113	...	...	+113	+177

G.—SLATE.

							Tons.										
Bihar and Orissa	Monghyr	6	...	6	...	...	2,000	30	24	...	54	192	32	...	224	278
Panjab	Kangra	5	...	5	9	10	5,015	112	...	...	112	221	65	58	344	456
	Gurgaon	5	...	5	4	9	2,976	141	...	38	179	57	...	9	66	245
	TOTAL	10	...	10	13	19	7,991	253	...	38	291	278	65	67	410	701
	GRAND TOTAL (SLATE) FOR 1912.	16	...	16	13	19	9,991	283	24	38	345	470	97	67	634	979
	„ „ OF PRECEDING YEAR.	14	...	14	9	9	7,135	199	23	29	251	396	80	94	570	821
	DIFFERENCE	+2	...	+2	+4	+10	+2,856	+84	+1	+9	+94	+74	+17	—27	+64	+158

H.—GOLD.

							Ozs.									
Madras	Anantapur	3	3	...	...	...	7,269	535	...	...	535	880	298	43	1,221	1,756
	TOTAL of preceding year	4	3	1	3	3	8,277	560	...	...	560	700	69	45	814	1,374
	DIFFERENCE	—1	...	—1	—3	—3	—1,008	—25	...	...	—25	+180	+229	—2	+407	+382

I.—IRON.

							Tons.									
Bihar and Orissa	Singhbhum	1	...	1	1	4	79,083	775	500	125	1,400	50	25	25	100	1,500
Central Provinces	Jabalpur	1	...	1	...	...	300	...	4	4	8	6	20	6	32	40
	GRAND TOTAL (IRON) FOR 1912.	2	...	2	1	4	79,383	775	504	129	1,408	56	45	31	132	1,540
	„ „ OF PRECEDING YEAR.	2	...	2	...	...	36,601	351	25	37	413	545	410	...	955	1,368
	DIFFERENCE	...	...	...	+1	+4	+42,782	+424	+479	+92	+995	—489	—365	+31	—823	+172

STATISTICS OF MINES AND MINERALS—*contd.*

Table No. 1—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1912.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Total output.	Average number of persons employed daily in and about the mines.								Grand total below and above ground.
								Below ground.				Above ground.				
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
					J.—WOLFRAM.											
							Cwts.									
Burma	Tavoy	28	...	28	...	...	25,397	950	18	1	969	1,048	128	10	1,186	2,155
Central Provinces . .	Nagpur	1	...	1	...	...	4	4	8	...	12	1	4	...	5	17
	GRAND TOTAL (Wolfram) for 1912.	29	...	29	...	...	25,401	954	26	1	981	1,049	132	10	1,191	2,172
	„ „ of preceding year.	4	1	3	...	...	8,394	388	...	5	393	152	...	...	152	545
	Difference . . .	+25	−1	+26	...	...	+17,007	+566	+26	−4	+588	+897	+132	+10	+1,039	+1,627
					K.—MAGNESITE.											
							Tons.									
Madras	Salem	1	...	1	...	...	15,379	399	466	165	1,030	69	21	5	95	1,125
	Total of preceding year .	1	...	1	...	...	3,490	150	105	33	288	24	10	5	39	327
	Difference . . .	...	...	...	...	...	+11,889	+249	+361	+132	+742	+45	+11	...	+56	+798

					L.—CHROMITE.												
							Cwts.										
Baluchistan . . .	Quetta-Pishin . . .	2	...	2	...	...	120	5	...	...	5	4	...	...	4	9
	TOTAL of preceding year .	4	1	3	4	5	5,380	8	...	...	8	1	...	...	1	9
	DIFFERENCE . . .	−2	−1	−1	−4	−5	−5,260	−3	...	...	−3	+3	...	...	+3	...
					M.—COPPER ORE.												
							Tons.										
Bihar and Orissa . .	Singhbhum	1	1	...	1	2	8,984	593	...	...	593	380	172	45	597	1,190
	TOTAL of preceding year .	1	1	...	1	4	2,079	423	313	51	787	533	...	3	536	1,323
	DIFFERENCE . . .	...	...	...	...	−2	+6,905	+170	−313	−51	−194	−153	+172	+42	+61	−133
					N.—FULLER'S EARTH.												
							Tons.										
Central Provinces . .	Jabalpur	1	...	1	...	...	98	...	...	...	...	...	...	...	...	... *
	TOTAL of preceding year .	1	...	1	1	1	118	...	...	...	...	...	...	...	...	... *
	DIFFERENCE . . .	...	...	...	−1	−1	−20	...	...	...	...	...	...	...	...	... *
					O.—CLAY.												
							Tons.										
Central Provinces . .	Jabalpur	3	...	3	1	1	18,285	39	55	...	94	27	9	...	36	130
	TOTAL of preceding year .	3	1	2	1	1	14,927	27	46	...	73	21	7	...	28	101
	DIFFERENCE . . .	...	−1	+1	...	...	+3,358	+12	+9	...	+21	+6	+2	...	+8	+29
					P.—BAUXITE.												
							Tons.										
Central Provinces . .	Jabalpur	1	...	1	...	...	950	12	20	...	32	4	...	6	10	42
	TOTAL of preceding year .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	DIFFERENCE . . .	+1	...	+1	...	...	+950	+12	+20	...	+32	+4	...	+6	+10	+42

* Figures included with those of Central Provinces Limestone.

STATISTICS OF MINES AND MINERALS—*contd.*

Table No. 1—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1912.

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								Below ground.				Above ground.				
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
							Q.—GALENA.									
							Cwts.									
Madras	Kurnool	1	...	1	...	...	160	13	14	8	35	3	3	...	6	41
	Total of preceding year	2	1	1	...	...	4	13	9	3	25	2	2	...	4	29
	Difference	−1	−1	...	...	...	+156	...	+5	+5	+10	+1	+1	...	+2	+12
							R.—TIN.									
							Cwts.									
Burma	Mergui	1	...	1	...	...	1,235	70	...	...	70	85	...	...	85	155
	Tavoy	1	...	1	...	...	30	...	...	...	...	...	...	...	...	... *
	GRAND TOTAL (Tin) for 1912.	2	...	2	...	...	1,265	70	...	...	70	85	...	...	85	155
	" " of preceding year.	2	1	1	...	...	283	36	...	...	36	37	...	...	37	73
	Difference	...	−1	+1	...	...	+982	+34	...	...	+34	+48	...	...	+48	+82

* Labour figures included with those for Wolfram.

							S.—STEATITE.									
							Cwts.									
Central Provinces . .	Jabalpur	1	...	1	...	...	11,200	24	36	...	60	4	8	...	12	72
	TOTAL of preceding year .	3	...	3	2	2	12,136	31	12	11	54	22	13	...	35	89
	DIFFERENCE . . .	—2	...	—2	—2	—2	—936	—7	+24	—11	+6	—18	—5	...	—23	—17
							T.—GRAPHITE.									
							Cwts.									
Madras	Ramnad	1	...	1	..	...	...	4	...	...	4	6	2	...	8	12
	TOTAL of preceding year .	1	...	1	...	...	1,076	10	1	...	11	2	12	...	14	25
	DIFFERENCE . . .	...	...	...	...	...	—1,076	—6	—1	...	—7	+4	—10	...	—6	—13
							U.—CORUNDUM.									
							Cwts.									
Madras	Trichinopoly . . .	1	...	1	...	...	2,494	21	88	4	113	36	74	34	144	257
	TOTAL of preceding year .	1	...	1	...	...	2,167	30	120	75	225	10	30	25	65	290
	DIFFERENCE . . .	...	...	...	...	...	+327	—9	—32	—71	—112	+26	+41	+9	+79	—33
							V.—SAMARSKITE.									
							Cwts.									
Madras	Nellore	1	...	1	...	...	29	...	...	...	...	...	...	...	...	... *
	TOTAL of preceding year .	1	1	...	...	...	24	2	...	...	2	...	...	...	..	2
	DIFFERENCE . . .	...	—1	+1	...	...	+5	—2	...	...	—2	...	...	...	...	—2

* Figures included with that of Madras mica.

STATISTICS OF MINES AND MINERALS—*contd.*

Table No. 1—*concld.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1912.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Total output.	Average number of persons employed daily in and about the mines.								
								Below ground.				Above ground.				Grand total below and above ground.
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
							Tons.									
	GRAND TOTAL (ALL MINERALS.)	1,147	299	848	426	723	14,823,919 Cwts. 82,329 Ounces. 7,269 Carats. 323,247	65,133	37,211	1,636	103,980	36,838	19,296	4,188	60,322	164,302
							Tons.									
	GRAND TOTAL OF PRECEDING YEAR.	1,058	313	745	548	914	12,771,797 Cwts. 61,150 Ounces. 8,277 Carats. 288,216	59,471	32,682	1,503	93,656	32,577	16,289	3,814	52,680	146,336
							Tons.									
	DIFFERENCE . . .	+89	—14	+103	—122	—191	+2,052,122 Cwts. +21,179 Ounces. —1,008 Carats. +35,031	+5,662	+4,529	+133	+10,324	+4,261	+3,007	+374	+7,642	+17,966

APPENDIX I—*contd.*

Table No. 2.

Number of mines opened and closed during the year ending 31st December 1912.

Province.	District.	Number of mines opened.	Number of mine closed.
	A.—COAL.		
Assam	Lakhimpur	...	1
Baluchistan	Sibi	4	1
Bihar and Orissa — Hazaribagh	Bokaro-Ramgarh	6	2
	Giridih	2	...
Bihar and Orissa — Manbhum	Jharia	39	5
	Raniganj	24	1
Bihar and Orissa — Total		71	8
Bengal	Burdwan-Raniganj	18	3
Central Provinces	Chhindwara	2	...
Panjab	Jhelum	1	1
	Shahpur	1	...
Panjab — Total		2	1
Total (Coal)		97	14
	B.—MICA.		
Bihar and Orissa	Monghyr	10	1
	Hazaribagh	237	82
	Gaya	4	2
Bihar and Orissa — Total		251	85
Madras	Nellore	17	9
	Salem	2	...
Madras — Total		19	9
Rajputana	Ajmer-Merwara	8	...
Total (Mica)		278	94
	C.—MANGANESE.		
Central Provinces	Bhandara	2	2
	Nagpur	3	3
Central Provinces — Total		5	5
Madras	Vizagapatam	...	1
Total (Manganese)		5	6
	D.—LIMESTONE.		
Central Provinces	Jabalpur	6	4
	E.—SALT.		
Panjab	Jhelum	...	1
	F.—GOLD.		
Bombay	Dharwar	...	1
	G.—IRON.		
Central Provinces	Jabalpur	...	1
	H.—WOLFRAM.		
Burma	Tavoy	4	...
	I.—GALENA.		
Madras	Kurnool	...	1
	J.—BAUXITE.		
Central Provinces	Jabalpur	...	1
	K.—GEMS.		
Madras	Kurnool	...	1
	L.—CHROMITE.		
Baluchistan	Quetta-Pishin	...	1
GRAND TOTAL		390	125

APPENDIX I—*concld.*

Table No. 3.

The following table shows the fluctuations in the output of the principal minerals raised from mines classed under the Indian Mines Act, 1901. The other minerals raised are gems, slate, gold, iron ore, magnesite, chromite, copper ore, tin, steatite, graphite, fuller's earth, clay, galena, wolfram, corundum, bauxite and samarskite.

Year.	Coal.	Manganese.	Mica.	Limestone.	Salt.
	Tons.	Tons.	Cwts.	Tons.	Tons.
1903 . . .	6,812,725	171,223	20,100	35,238	99,067
1904 . . .	7,561,338	138,733	21,320	50,847	107,413
1905 . . .	7,770,471	204,194	25,548	93,170	94,078
1906 . . .	9,112,663	436,442	50,488	48,836	118,023
1907 . . .	10,526,468	642,082	44,919	73,222	101,703
1908 . . .	12,149,020	494,942	46,208	101,569	93,779
1909 . .	11,294,227	357,205	32,011	56,502	126,987
1910 . . .	11,387,716	468,669	21,375	81,258	119,867
1911 . . .	12,048,726	441,426	31,686	92,692	124,603
1912 . . .	14,044,368	423,464	41,660	91,784	131,233

Table No. 4.

The following table shows the amount of coal raised, the average number of persons working daily and the death-rates during the years 1903 to 1912 in respect of coal mines under the Indian Mines Act, 1901.

Year.	Amount of coal raised.	Average number of persons working daily below and above ground.	Number of deaths below and above ground.	Death-rates.	
				Per 1,000,000 tons raised.	Per 1,000 persons working daily below and above ground.
1903 . . .	6,812,725	79,561	67	9·83	·84
1904 . . .	7,561,338	82,002	55	7·27	·67
1905 . . .	7,770,471	79,506	58	7·46	·72
1906 . . .	9,112,663	90,159	80	8·78	·89
1907 . . .	10,526,468	102,689	89	8·45	·86
1908 . . .	12,149,020	120,107	164	13·49	1·36
1909 . . .	11,294,227	109,291	119	10·53	1·08
1910 . . .	11,387,716	105,285	160	14·05	1·52
1911 . . .	12,048,726	106,598	148	12·28	1·38
1912 . . .	14,044,368	121,392	157	11·17	1·29

Table No. 5.

Statement showing the output of coal, the number of persons employed and the number of tons of coal raised per person employed in and about the coal mines of the principal coal-producing countries of the world.

Year.	Country.	Tons of coal raised.	Persons employed.	Tons raised per person employed.
1911	United Kingdom . . .	271,878,124	1,032,702	263
1910	United States	447,855,535	725,030	617
,,	Germany	218,861,550	694,216	315
,,	Austria	38,292,112	131,066	292
,,	France	37,040,262	196,786	188
,,	Belgium	23,538,685	143,902	163
,,	Nova Scotia	5,477,146	11,001	497
,,	British Columbia . . .	3,139,235	7,758	404
,,	Australia	9,758,994	27,264	357
,,	Natal	2,294,746	10,501	218
,,	Transvaal	3,548,550	8,795	403
,,	Japan	15,433,560	137,467	112
,,	New Zealand	2,197,362	4,599	477
1909	Russia	...	...	...
		1,079,315,861	3,131,087	344
1912	British India	14,044,368	121,392	115

APPENDIX II.

ACCIDENTS IN MINES.

Table No. 1.

List of Fatal Accidents in mines regulated by the Indian Mines Act, 1901, during the year 1912.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			EXPLOSIONS OF FIRE-DAMP—(*1 death*).			
1	15th May, 8 A.M.	Bhowra Mine, Jamadoba P. O., Bihar and Orissa.	Eastern Coal Co., Ld.	Tiku Singh, (*m.*), 46, *Main-header.*	Coal	Deceased turned on a hand fan 48 feet from the face of a cross-cut heading, which was full of gas. He fanned the gas back on to a naked light near the fan, an explosion occurred, and he was burned, dying four days afterwards. Inspection and inquiry made. *See Report, page 6.*
			FALLS OF ROOF AND SIDES—(*79 deaths*).			
			(*a*) **Falls of roof**—(*35 deaths*).			
2	11th January, 11 P.M.	Banakuri Mine, Chowkidanga P. O., Bengal.	South Kenda Coal Co.	Purish Bauri, (*m.*), 60, *Coal-cutter.*	Coal	Deceased with some loading kamins went without orders into a road where a shot had been fired close to the tubs they were loading, in order to get some of the fallen coal. A small piece (20 lbs.) fell from the roof on to deceased's arm and broke his wrist. Blood poisoning set in and he died ten days later. His arm should have been amputated, but he refused to go to hospital for the purpose. Inspection and inquiry made.
3	25th January, 5 P.M.	North Kustore Mine, Kusunda P. O., Bihar and Orissa.	Kusunda and Nayadi Collieries, Ld.	Janki Hazam, (*m.*), 45, *Miner.*	Coal	A piece of roof coal, measuring $5\frac{1}{2}' \times 3' \times 3'$ thick, fell from a height of 5′ 6″ upon deceased and killed him outright. He had entered the place without a light during prohibited hours with the object, it is surmised, of loading up some loose coal, as a basket only was found by his side. Inspection and inquiry made.
4	3rd February, 1-30 P.M.	Pathargada Mine, Bhujudih P. O., Bihar and Orissa.	Kohinoor Coal Co., Ld.	Sonchand Kora, (*m.*), 28, *Miner.* Sohaia Korin, (*f.*), 18; Mukta Korin, (*f.*), 14, *Coal-carriers.*	Coal	Five persons were working in the head end of a gallery when signs of roof weighting were heard. They made a dash for the entrance of the gallery, but were caught by an extensive fall of roof, measuring 19′ long × $9\frac{1}{2}'$ wide × 3′ thick. The three deceased were killed outright and the other two were seriously injured but recovered. Inspection and inquiry made.
5	9th February, 10 A.M.	Lodna Mine, Jharia P. O., Bihar and Orissa.	Lodna Colliery Co., Ld.	Ramni Bhuia, (*f.*), 20, *Coal-carrier.*	Coal	Deceased's husband broke down a fence and commenced to work in the face of a gallery near the outcrop. The soft roof caved in and deceased who was filling a basket with coal was severely injured by the fall of about two tons of stone. She did not die until the 29th September, after giving birth to a child, and did not work again after the accident. Inspection and inquiry made.

Fatal Accidents, 1912—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*contd.*			
			(*a*) **Falls of roof—*contd.***			
6	12th February, 11-30 A.M.	Ledo Valley, West Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Birbahadur Paharia, (*m.*), 23, *Basket-carrier.*	Coal . .	Whilst deceased was emptying a basket into a coal tub inside a "chamber" a fall of about half a ton of coal fell without warning from a height of 14 feet. His skull was crushed between the edge of the tub and the coal and he was killed on the spot. The sirdar was present at the time. Inspection and inquiry made.
7	17th February, 3 A.M.	New Tetturia Mine, Katrasgarh P. O., Bihar and Orissa.	New Tetturia Coal Co., Ld.	Robi Bauri, (*m.*), 40, *Coal-cutter.*	Coal . .	Roof coal was being taken down on a tram road whilst traffic of tubs was permitted to go on. Miners working inbye were disputing with those working at the roof coal for the possession of empty tubs when a piece of the roof coal, 2 feet thick, fell over an area 12′ long by 4′ wide. Deceased was killed on the spot and another miner was severely injured. Inspection and inquiry made.
8	23rd February, 2 P.M.	Lutchipur Mine, Sitarampur P. O., Bengal.	Lutchipur Coal Co., Ld. .	Kadi Manjhian, (*f.*), 22, *Tub-filler.*	Coal . .	Deceased was standing at the mouth of a gallery when a stone, 3′ 8″ long × 10″ to 2″ at each end thick × 1′ 6″ high, fell from a height of 5 feet on to her. The place had been recently dressed down. She sustained a compound fracture of the leg. Her relatives refused proper treatment, and she was burned four days afterwards through their carelessness. The immediate cause of death was shock caused by the burning. Inspection and inquiry made.
9	26th February, 4-30 P.M.	Bhutgoria Mine, Jamadoba P. O., Bihar and Orissa.	Aldih Coal Co., Ld. .	Madu Panka, (*m.*), 36, *Coal-cutter.*	Coal . .	Whilst getting out the last portion of a coal pillar in "broken" workings deceased undercut too far and brought down about half a ton of roof coal from a height of 7 feet. The mass measuring about 3′ × 3′ × 15″ thick, fell on him and fractured his spine. He died in hospital a fortnight later. The sirdar had warned him against undercutting only a few minutes before the accident. Inspection and inquiry made.
10	18th March, 6 P.M.	North Kustore Mine, Kustore P. O., Bihar and Orissa.	Raniganj Coal Association, Ld.	Bhattu Roy, (*m.*), 25, *Coal-cutter.*	Coal . .	Deceased was one of a number of miners engaged in the extraction of a pillar of coal in a "broken" district. He undercut the end of the pillar to a depth of three feet and was struck by the fall of about 2 tons of roof coal. The mass fell away from a pronounced "slip" and measured 6′ × 3′ × 2′ 3″ thick. Inspection and inquiry made.
11	27th March, 6-30 A.M.	North Kustore Mine, Kusunda P. O., Bihar and Orissa.	Kusunda Nayadi Collieries, Ld.	Umrao Gossain, (*m.*), 32, *Propping-coolie.*	Coal . .	Deceased was one of a gang of men who were employed in taking down roof coal and timbering the roof thus exposed. Whilst they were setting a prop under the roof a mass of coal, 7′ × 6′ × 3′ thick, fell from a "slip" knocking out five props set beneath it. Deceased was caught by the fall and killed outright. Two other men were slightly injured. Inspection and inquiry made.

12	3rd April, 9 A.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Lokheang Tieng, (*m.*), 30, *Basket-carrier.*	Coal . .	Whilst fifteen men were working in a "chamber," 48'×48'×12'—20' high, the roof coal began to weight. The sirdar gave the alarm and everyone ran out except deceased who delayed to pick up a basket and was buried by a fall of about 3 tons of coal. When extricated fifteen minutes later he was dead. Inspection and inquiry made.
13	5th April, 2 P.M.	Sibpur Mine, Charanpur P. O., Bengal.	Katras Jharia Coal Co., Ld.	Binda Passi, (*m.*), 35, *Underground sirdar.*	Coal . .	While drawing timber from under some roof coal, 2 feet thick, in a place where a pillar had been taken cut, a sudden fall of the coal took place which swayed out four props, 17 feet long, three of which struck deceased and killed him on the spot. Inspection and inquiry made. *See Report, page 6.*
14	3rd May, 11 P.M.	Bhaga Mine, Jharia P. O., Bihar and Orissa.	Jharia Colliery Co., Ld.	Abdul Meah, (*m.*), 25, *Coal-cutter.*	Coal . .	Owing to the roof coal weighting three miners were prevented by the sirdar from commencing to load fallen coal at the edge of the goaf. He fenced the place off and told the men to await his return. Some two hours later deceased went through the fence to see the condition of the roof, and was killed on the spot by a fall of roof coal, 8 feet long by 2'—8" wide by 4' thick, fringing a pillar on the edge of the goaf. Inspection and inquiry made.
15	17th May, 1 P.M.	West Gopalichak Mine, Kusunda P. O., Bihar and Orissa.	Gopalichak Coal Co., Ld.	Manwa Chamarin, (*f.*), 20, *Coal-carrier.*	Coal . .	Whilst a miner was robbing coal from the corner of a pillar in fenced off workings, roof coal, 9 inches thick, fell over an area about 6 feet in diameter. Deceased, who carried coal for the miner, was struck on the head and killed on the spot. The miner absconded. Inspection and inquiry made.
16	30th May, 4 A.M.	Bulliari Mine, Jharia P. O., Bihar and Orissa.	Khas Jharia and Bulliari Coal Concern.	Kunjal Ganda, (*m.*), 30, *Sirdar.* Dukhni Gandain, (*f.*), 25, *Coal-carrier.*	Coal . .	The deceased sirdar deliberately removed a fence set round an old goaf in order that the woman, who was his wife, might pick up some coal from the goaf. A fall of roof, 15'×6'×2' 3", occurred killing both deceased outright and injuring two other persons. The place appeared to have been well timbered and it is probable that work on a pillar near by caused the roof to fall. Inspection and inquiry made.
17	5th August, 1 P.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Sambhu Santal, (*m.*), 24, *Basket-filler.*	Coal . .	Deceased was caught by a fall of about two tons of coal which came from a smooth parting in the roof not previously disclosed. The sirdar on hearing the roof coal weighting gave the alarm, but deceased continued working; death was instantaneous.
18	20th August, 2 A.M.	Jamadoba Mine, Jamadoba P. O., Bihar and Orissa.	Indian Collieries Syndicate, Ld.	Rangu Bhuia, (*m.*), 32, *Coal-cutter.*	Coal . .	Whilst commencing a new gallery where the roof was unsound a piece of shale, 7'×4' 6"×12", weighing two tons, fell from the roof and killed deceased on the spot. The sirdar who gave instructions for work there was fined and dismissed. Inspection and inquiry made.
19	24th August, 5 P.M.	Lower Kusunda Mine, Kusunda P. O., Bihar and Orissa.	Kusunda and Nayadi Collieries, Ld.	Surhu Munda, (*m.*), 18, *Coal-cutter.*	Coal . .	Deceased and another miner were commencing to drive a pair of galleries through a large pillar in a "broken" area. The galleries were only two feet apart, and deceased cut away the rib in between and brought down roof coal, measuring 9'×2' 6"×2' 6" and weighing about two tons. He was struck on the head and died from the injury about two hours later. Inspection and inquiry made.
20	6th September, 6-30 P.M.	Bhagaband Mine, Jharia P. O., Bihar and Orissa.	Borrea Coal Co., Ld.	Dukhi Singh, (*m.*), 25, *Coal-cutter.*	Coal . .	Whilst cutting side coal under orders from a sirdar, deceased undercut to a depth of four feet in a seam 7' high. Roof stone, 2' 8"×1' 6"×4" thick, fell on his head and killed him on the spot. The sirdar who had seen the place just before the accident was fined and dismissed. Inspection and inquiry made.

Fatal Accidents, 1912—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*contd.*			
			(a)* Falls of roof—*contd.			
21	8th September, 8 A.M.	Loyabad Mine, Bansjora P. O., Bihar and Orissa.	Barakar Coal Co., Ld.	Kehali Dhobi, (*m.*), 25, *Coal-cutter.*	Coal	Deceased deliberately broke down a fence and accompanied by another miner and two carriers was about to rob coal from a pillar. No sooner had he sounded the roof than a mass of coal, 18′×4′×1′ thick and weighing three tons, fell and killed him on the spot. Inspection and inquiry made.
22	24th September, 5 A.M.	Kendwadih Mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Jagarnath Chamar, (*m.*), 25, *Coal-cutter.*	Coal	Deceased and another miner were ordered to load dust inside a fence close to a pillar under extraction. They opened the fence and loaded six tubs of coal from an abandoned stump on the edge of the goaf. Some 5 cwts. of coal fell from a height of 10 feet and struck deceased on the head fracturing his skull. He was killed on the spot. The sirdars and the other members of the gang were fined and dismissed. Inspection and inquiry made.
23	27th September, 12-30 A.M.	North Kustore Mine, Kustore P. O., Bihar and Orissa.	Raniganj Coal Association, Ld.	Pokhan Meah, (*m.*), 45, *Coal-cutter.*	Coal	Whilst deceased was standing near a pillar in a pillar cutting district some 5 tons of "Jhamma" coal fell from the roof and side swaying out three vertical props. He received injuries which resulted in death a few hours later. Sprags would have prevented the accident whereas vertical props failed to do so. Inspection and inquiry made.
24	9th November, 8 P.M.	Barari Mine, Jamadoba P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Sheo Ratan Dosadh, (*m.*), 30, *Sirdar.*	Coal	Whilst some forty persons were loading out coal from a pillar which had been "dropped" in a seam 26′ thick, the roof began to weight. All ran out except deceased who remained behind apparently to watch developments and was killed by a fall of roof stone, measuring 50′ × 10′ × 12″ to 30″ thick. Inspection and inquiry made.
25	13th November, 11 A.M.	Asansol Mine, Asansol P. O., Bengal.	Ghusik and Muslia Collieries, Ld.	Nathoo Khayra, (*m.*), 22, *Propping mistri.*	Coal	Deceased entered, without instructions, an old road which was fenced off, in order to knock out some props, which he intended to set in another place. He had knocked out two and as he was knocking out the third a stone, 1′ 3″ × 1′ 0″ × 6″, fell. He died three hours later from injuries received. Inspection and inquiry made.
26	18th November, 1 A.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway	Habibullah Khan, (*m.*), 30, *Coal miner.* Ahmad Ali, (*m.*), 22, *Coolie.*	Coal	The deceased Habibullah was cutting coal when a fall of roof occurred, which fell on him crushing his head and chest. The deceased Ahmad Ali was also injured in the leg. The former was killed at once and the latter died three months later.
27	20th November, 3-30 A.M.	Bhagaband Mine, Jharia P. O., Bihar and Orissa.	Borrea Coal Co., Ld.	Maksadan Mahato, (*m.*), 30, *Coal-cutter.*	Coal	After the miners and sirdar had left the mine deceased returned, unknown to them, to cut a few more baskets full to fill his tub. No sooner had he begun to cut coal at the corner of a pillar where he worked in a new pillar cutting district, than a fall of side coal and roof shale came over. He was struck by a slab of shale, measuring 7′ 6″ × 3′ 6″ × 4″, and died shortly after from a fracture of the skull. Inspection and inquiry made.

28	23rd November, 7 A.M.	Kuordih Mine, Kalipahari P. O., Bengal.	Kuordih Coal Co., Ld.	Khidoa Khora, (*m.*), 28, *Coal-cutter.*	Coal	Deceased was taking off a piece of roof coal at the corner of a pillar and was standing on top of his basket cutting it when it came away. His foot slipped off the basket and a piece weighing about 15 cwts. struck him and smashed his leg. He was taken to hospital where he died next day. Inspection and inquiry made.
29	25th November, 4-30 A.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Shadai Teli, (*m.*), 30, *Coal-trammer.*	Coal	Deceased was walking up an opening preparatory to recommencing work when about a ton of dirt fell suddenly on to him and killed him. There was a bolt hole within four feet. The "Buskawalla" gave warning but the fall and the warning were practically simultaneous.
30	29th November, 5-30 A.M.	West Gopalichak Mine, Kusunda P. O., Bihar and Orissa.	Gopalichak Coal Co., Ld.	Nagu Singh, (*m.*), 30, Churu Gope, (*m.*), 40, *Coal-carriers.*	Coal	The two deceased went illegally through a fence into the goaf either to cut coal or to pick up fallen coal, and were killed by the fall of a mass of roof coal, about 40 feet square and 6 feet thick, and weighing some hundreds of tons. Inspection and inquiry made.
31	15th December, 7-50 P.M.	Angarpatra Mine, Katrasgarh P. O., Bihar and Orissa.	Union Coal Co., Ld.	Moni Meab, (*m.*), 28, *Coal-cutter.*	Coal	Whilst getting coal in a pillar-cutting district deceased undercut the stone band and top coal until a mass of stone and coal, 6′ 6″ × 2′ × 15″, fell away from a joint and knocked him down inflicting injuries from which he died a few hours later. Inspection and inquiry made. *See Report, page 7.*
			(*b*) **Falls of sides**—(*44 deaths*).			
32	10th January, 6 A.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Ramanandan, (*m.*), 27, *Coal-filler.*	Coal	Deceased was filling baskets from a large heap of coal and stone when a piece of fallen stone weighing about 10 cwts. slipped down from the rise side and pinned him against the lower wall of the "chamber." He sustained fractures of both thighs and dislocation of both hip joints and died on the 24th February. Inspection and inquiry made.
33	13th January, 8 A.M.	Pagaye Mine, Tavoy P. O., Burma.	E. Crisp & Co.	Ah Taik, (*m.*), 25, Ah Toon, (*m.*), 30, *Miners.*	Wolfram	Whilst undercutting in an open cutting the two deceased were killed on the spot by a fall of side. Inspection and inquiry made.
34	18th January, 3 P.M.	West Wagon, Tavoy P. O., Burma.	C. Soo Don	Ah Hin, (*m.*), 26, *Miner.* Maung Gya, (*m.*), 28, *Coolie.*	Wolfram	Whilst undercutting in the face of an open cutting the two deceased were killed on the spot by a fall of side. Inspection and inquiry made.
35	1st February, 3-30 A.M.	Sudamdih Mine, Bhujudih P. O., Bihar and Orissa.	Empire Coal Co., Ld.	Sona Gope, (*m.*), 35, Deya Gope, (*m.*), 30, *Stone-cutters.*	Coal	A mass of earth, weighing about 100 tons, slipped from the side of a quarry which had recently been sloped to an angle of 60° and buried deceased who were working below. A slight percolation of water from an adjoining nallah had affected the side and facilitated collapse. Inspection and inquiry made. *See Report, page 7.*
36	5th February, 9 P.M.	Salanpur Mine, Sitarampur P. O., Bengal.	Borrea Coal Co., Ld.	Naran Ghatwal, (*m.*), 21, *Coal-cutter.*	Coal	While in the act of cutting coal a piece came away and fell on deceased's right thigh causing injuries from which he died the following day.
37	11th February, 7 A.M.	Kendwadih Mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Gonori Rajwar, (*m.*), 38, *Coal-cutter.*	Coal	In the course of his work in a "broken" district deceased brought down a mass of some two tons of coal from a pillar. The coal knocked out a prop 17 feet in length which fell on him and killed him. Inspection and inquiry made.

Fatal Accidents, 1912—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*contd.*			
			(*b*) **Falls of sides—*contd.***			
38	24th February, 8-20 A.M.	No. 2 Clay pit, Jabalpur P. O., Central Provinces.	Perfect Pottery Co., Ld.	Dularia Kachin, (*f.*), 25, *Clay-carrier.* Samalia Chamar, (*m.*), 24, *Labourer.*	Clay .	During the firing of a shot the two deceased took refuge under the side of an abandoned portion of a quarry. The concussion set up by the blast caused the side, which was insecure through weathering, to fall upon them causing such serious injuries that they both succumbed the same day. Inspection and inquiry made.
39	7th April, 6 A.M.	Barari Mine, Jamadoba P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Dubraj Bauri, (*m.*), 25, *Miner.*	Coal .	Deceased worked with others at a "knob" of coal which was being removed in the course of pillar extraction. Owing to their having improperly undercut the "knob" the sirdar removed them and set them to cut floor coal further back. Deceased disobeyed the orders and passing through the fence cut coal from the "knob." Whilst doing so a slab of coal, 2′ 6″ thick and weighing about 1½ tons, fell on him and killed him on the spot. Inspection and inquiry made.
40	18th April, 1-40 P.M.	Bhulanbarari Mine, Jharia P. O., Bihar and Orissa.	Bhulanbarari Coal Co., Ld.	Bilasha Bilaspuri, (*f.*), 22, *Coal-carrier.*	Coal .	Deceased went through a fence and whilst there was killed by the fall of about 5 tons of coal from the side of a pillar 25 feet high. Inspection and inquiry made.
41	30th April, 11 A.M.	Hermyingyi Mine, Tavoy P. O., Burma.	Hermyingyi Mining Co., Ld.	Wong Sheg, (*m.*), 25, Wong Htwea, (*m.*), 26, *Miners.*	Wolfram .	The two deceased were undercutting a hanging wall in an open cutting when they were killed on the spot by a fall of side. Inspection and inquiry made.
42	30th April, 5 P.M.	Budha Mine, Ramgarh P. O., Bihar and Orissa.	Sadananda Banerji .	Jurni Kurmin, (*f.*), 50, *Coal-carrier.*	Coal .	Deceased was working in a quarry and was killed by the fall of overburden. The excavation had approached too near the edge of an adjacent quarry worked by another owner. Inspection and inquiry made.
43	20th May, 10 A.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Gathuri Raighotar, (*m.*), 30, *Basket-filler.*	Coal .	Three shots had been fired in a "chamber" by the head sirdar who afterwards examined the place and declared it safe. About an hour later whilst both the opening sirdar and the opening man were present a mass of about a ton of coal fell from the side of the opening from a height of 12 feet. Whilst running out deceased was knocked down 6 feet from the bolt hole, and killed on the spot. Inspection and inquiry made.
44	20th May. 1 P.M.	Belrui Mine, Sitarampur P. O., Bengal.	New Beerbhum Coal Co., Ld.	Aklu Lohar, (*m.*), 50, *Miner.* Kumuda Loharin, (*f.*), 13, *Coal-carrier.*	Coal .	The deceased, Aklu, deliberately crossed over a stone, taking Kumuda and another child with him. He commenced to rob the corner of a pillar, when about 1½ tons of coal fell suddenly. He died a few minutes after being brought to the surface. Kumuda was killed outright. The other child was injured, but recovered. Inspection and inquiry made.

45	4th June, 2 P.M.	Meke Myebya Mine, Tavoy P. O., Burma.	Lim Kyee Yan .	Ah Pwe, (*m.*), 25, Ah Luin, (*m.*), 22, Shang Eng, (*m.*), 22, I. Shang, (*m.*), 30, *Miners.*	Wolfram .	Whilst getting ore from an open cutting the deceased were killed on the spot by a fall of earth due to a dangerous method of working in unsupported ground and to a lack of proper supervision. Inspection and inquiry made.
46	25th June, 2-30 P.M.	Gopalichak Mine, Jharia P. O., Bihar and Orissa.	Gopalichak Coal Co., Ld.	Kaila Manjhi, (*m.*), 34, *Coal-cutter.*	Coal .	A miner and a sirdar were engaged in bringing down a mass of side coal, 6′×4′×2′, from a pillar in a pillar cutting district. When the coal fell it knocked out two props, 13 feet in length, and the end of one of these props struck deceased on the head and killed him on the spot. Inspection and inquiry made.
47	13th August, 5 P.M.	Dhibri Mine, Ganwan P. O., Bihar and Orissa.	Ram Prosad . . .	Resoni Ghatwarin, (*f.*), 14, *Coolie.*	Mica .	Deceased was one of a chain of earth coolies taking out earth from an old excavation. She was standing under a bank of earth, 13 feet high, which suddenly fell and smashed her knee. She died from shock while being taken to hospital. Inspection and inquiry made.
48	29th August, 2 P.M.	Loyabad Mine, Bansjora P. O., Bihar and Orissa.	Barakar Coal Co., Ld. .	Debi Lal Mullick, (*m.*), 13, *Coal-carrier.*	Coal .	Deceased left his working place and accompanied by his mother and his brother was robbing coal from the corner of a pillar near the loading siding, when a mass of coal, 9′×5′×1′3″ and weighing about 2 tons, fell from a "slip" and killed him on the spot. His father was the sirdar in charge of the mine and denied complicity, but was fined and dismissed. Inspection and inquiry made.
49	11th September, 11 A.M.	Chanch Mine, Barakar P. O., Bihar and Orissa.	Bengal Coal Co., Ld. .	Fathi Manjhi, (*m.*), 43, *Coal-carrier.*	Coal .	A piece of coal, measuring 7′ × 7⅓′ × 1′, that had just been detached from the side of a pillar fell against a prop and knocked it out. This in turn knocked out another prop which struck the deceased on the abdomen. He died from the effects the following day. Inspection and inquiry made.
50	11th September, 12 Midnight.	Gopalichak Mine, Jharia P. O., Bihar and Orissa.	Gopalichak Coal Co., Ld. .	Sanichari Turin, (*f.*), 17, *Coal-carrier.*	Coal .	Whilst two coal-cutters were robbing coal from the corner of a pillar a mass of coal, measuring 5′ 6″ × 3′ 6″ × 2′ and weighing 1⅓ tons, fell from a "slip" upon deceased who was filling a basket. She sustained a fracture of the thigh and laceration of the leg and ankle and died from shock 2⅓ hours later. Inspection and inquiry made.
51	12th September, 8 A.M.	Kurhurbari Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co. .	Urdi Bhuia, (*m.*), 55, *Coal-cutter.*	Coal .	Deceased appears to have been engaged in cleaning up some dirt when a piece of stone, which another miner was wedging off, rolled against him causing injuries from which he died shortly after while being taken to hospital. Inspection and inquiry made.
52	8th October, 2 P.M.	Kusunda Mine, Kusunda P. O., Bihar and Orissa.	Kusunda and Nayadi Collieries, Ld.	Jubiya Kurmi, (*f.*), 15, Sonia Kurmi, (*f.*), 20, Akli Ghatwal, (*f.*), 24, *Coal-loaders.*	Coal .	The deceased were employed in loading small coal in a pillar cutting district. They removed a fence and began to load coal on a travelling road which had become dangerous and had been fenced off some days before. Whilst doing so a slab of coal, 12′ long × 1′—2′ thick and 16′ high, fell from a pillar and killed them on the spot. Inspection and inquiry made.
53	15th October, 12 Noon.	Baraboni Mine, Charanpur P. O., Bengal.	Ghusik and Muslia Collieries, Ld.	Jugal Bauri, (*m.*), 41, *Coal-cutter.* Rangi Baurin, (*f.*), 30, *Coal-carrier.*	Coal .	A gang of four coal-cutters and three female carriers entered the mine and proceeded to the usual working place where they were dissatisfied with the positions of the empty tubs. They decided not to work that day and had walked out as far as the main haulage slope when the deceased miner, who was the headman, broke down a fence and took the gang inside to get a few baskets of coal for domestic use. No sooner had he commenced to cut coal from a pillar than a slab of coal, 12′ high × 6′ wide and 12″ thick, fell over upon them. He and his wife were killed, two others were seriously injured and two were slightly injured. Inspection and inquiry made.

Fatal Accidents, 1912—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*concld.*			
			(*b*) **Falls of sides**—*concld.*			
54	17th October, 10 A.M.	Kanbauk Mine Tavoy P. O., Burma.	Radcliff & Co. . .	Young Yun, (*m.*), 30, *Miner.*	Wolfram .	Deceased went to work in an abandoned open cutting unknown to the manager. Some 15 tons of earth fell from the side and killed him on the spot. Inspection and inquiry made.
55	21st October, 4 P.M.	Basi Mine, Katangi P. O., Central Provinces.	Lala Gonesh Prosad .	Sonkai, (*f.*), 40, Negi, (*f.*), 50, *Coolies.*	Manganese .	The side wall of a boulder pit collapsed killing Sonkai and injuring Negi who died two days afterwards ; another woman was also injured.
56	29th October, 8 A.M.	Pagaye Mine, Tavoy P. O., Burma.	Rangoon Mining Co., Ld.	Ah Chee, (*m.*), 28, *Miner.*	Wolfram .	Deceased was engaged in cleaning a fall of ground in an open cutting when a mass of from two to three cwts. of rock fell away from a height of 15 feet above and killed him on the spot. Inspection and inquiry made.
57	2nd November, 3 P.M.	Banali Mine, Joba P. O., Bengal.	Phularitand Coal Co., Ld.	Lasa Manjhi, (*m.*), 25, *Miner.*	Coal .	Deceased left his proper working place and in order to rob coal went through a fence to a dangerous place which had been fenced off by the manager's orders. A piece of coal, weighing about 6 cwts., fell on him from a height of 10 feet and injured him. He died in two hours. Inspection and inquiry made.
58	5th November, 12 Midnight.	Sanctoria Mine, Dishargarh P. O., Bengal.	Bengal Coal Co., Ld. .	Dillu Singh, (*m.*), 30, *Miner.*	Coal .	A sirdar noticed that a place was dangerous and told deceased and other miners not to work there. Deceased however attempted to cut coal at this place when the sirdar had gone away for fencing and a piece of coal, 4′ × 2′ × 1′, fell from a height of 11 feet and killed him immediately. Inspection and inquiry made.
59	14th November, 6 A.M.	Dhundabad Mine, Sitarampur P. O., Bengal.	New Manbhum Coal Co., Ld.	Rohana Manjhi, (*m.*), 26, *Coal-cutter.*	Coal .	Deceased went through a fence into the goaf and had no sooner begun to cut coal from a pillar than about 2 tons of coal fell and killed him on the spot. Inspection and inquiry made.
60	13th December, 9 P.M.	North Kustore Mine, Kusunda P. O., Bihar and Orissa.	Kusunda and Nayadi Collieries, Ld.	Kaman Meah, (*m.*), 25, *Coal-cutter.*	Coal .	Deceased was accustomed to work on the night shift at a pillar in a "broken" district. As it had become dangerous this place was stopped by the overman during the day shift and fenced off. Whilst the day overman and the night sirdar were making safe another working place for the night shift deceased and three other persons passed through the fence and sat down. Shortly after a mass of coal, 13′ × 20″ × 20″, fell from the pillar, killing deceased and severely injuring a woman. Inspection and inquiry made.
61	17th December, 9 P.M.	Khas Jharia Mine, Jharia P. O., Bihar and Orissa.	Khora Ramji . .	Lakhmi Manjhian, (*f.*), 20, *Coal-loader.*	Coal .	Deceased went through a fence and was killed on the spot by the fall of a mass of coal which fell from a pillar 35 feet high. The mass measured 13′ × 6′ × 7′ 3″ and fell from smooth joints at a height of 7′ 6″ from the floor. Inspection and inquiry made.
62	19th December, 1-30 P.M.	Beko Mine, Jhumri Tilaya P. O., Bihar and Orissa.	Chagmull Lachminarain .	Jharia Hazam, (*m.*), 20, *Miner.*	Mica .	Deceased was killed by a fall of earth while washing himself in a part of the mine to which he had been forbidden to go owing to its being dangerous. Inspection and inquiry made.

			IN SHAFTS—(*24 deaths*).			
			Whilst ascending or descending by machinery—(*2 deaths.*)			
63	27th April, 3 P.M.	Bejdih Mine, Sitarampur P. O., Bengal.	Equitable Coal Co., Ld.	Shasi Bauri, (*m.*), 26, *Pump khalasi.*	Coal	One of the cages in a shaft had an open top and was fitted permanently with a square iron water bucket bolted to the floor of the cage. Deceased and another man were being pulled up slowly in order to examine the steam pipes. Both were sitting on the top of the frame of the cage. Deceased lost his balance and fell head first into the water bucket, a distance of 4′ 3″. His head came in contact with one of the bolts and he died in three hours. Inspection and inquiry made.
64	7th November, 5 A.M.	Saltore Mine, Dishargarh P. O., Bihar and Orissa.	Saltore Coal Co., Ld.	Deodat Singh, (*m.*), 40, *Miner.*	Coal	The bucket was raised up the shaft before it had been properly steadied. It caught in some projection and deceased was thrown out of it. His body was found on a water landing in the shaft, 383 feet from the surface. He was killed on the spot. Inspection and inquiry made.
			Falling into the shaft from the surface—(*2 deaths*).			
65	15th May, 10-30 A.M.	Kendra Mine, Pandaveswar P. O., Bengal.	Samla and Kendra Collieries, Ld.	Satish Akhuria, (*m.*), 24, *Head Banksman.*	Coal	As the banksman was pulling a tub out of the cage at the pit top the two front wheels came off the rails. Deceased ordered the engineman to raise the cage to let the tub fall out on to the pit bank. He then got into the cage. The tub fell out and fell down the pit. This lightened the cage which was then lifted 5 feet. Deceased got frightened and jumped. He just landed on the bank, but fell backwards and fell down the pit, which is 185 feet deep. He was killed instantly. Inspection and inquiry made.
66	26th July, 9 A.M.	Loyabad Mine, Bansjora P. O., Bihar and Orissa.	Barakar Coal Co., Ld.	Chhedi Meah, (*m.*), 35, *Fitter.*	Coal	Whilst deceased was standing on a head frame in course of erection the frame suddenly tilted and fell against the derrick pole. The jerk caused him to lose his hold and he fell to the bottom of the shaft, a distance of 120 feet, and was killed on the spot. Another workman clung to the frame and escaped. Inspection and inquiry made.
			Falling from part of the way down—(*11 deaths.*)			
67	8th February, 12 Noon.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway	Melaram, (*m.*), 18, *Coolie.*	Coal	Deceased was engaged in assisting a carpenter to set timber in a road dipping at an angle of 52° when he slipped and fell to the bottom, a distance of nearly 400 feet. He was killed outright. Inspection and inquiry made.
68	19th March, 2-30 P.M.	Lodna Mine, Jharia P. O., Bihar and Orissa.	Lodna Colliery Co., Ld.	Mohan Rewani, (*m.*), 20, *Coal-cutter.*	Coal	Whilst attempting to get into the bucket from a temporary platform in a sinking shaft, 360 feet deep, deceased's foot slipped and he fell to the bottom into water and was drowned. Inspection and inquiry made.
69	1st April, 10 P.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway	Bahadur, (*m.*), 35, *Carpenter.*	Coal	Deceased was getting out of a tub on a road dipping at an angle of 52° at a middle landing when by some mischance he slipped and fell to the bottom of the road, a distance of 350 feet. He was killed on the spot. Inspection and inquiry made.
70	10th May, 4-30 A.M.	Kendwadih Mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Brihaspet Roy, (*m.*), 20, *Stone-cutter.*	Coal	Three men were engaged in cutting a hole for a bunton in the side of the shaft and were standing on the top of the cage for the purpose. By some means the deceased fell to the bottom, 80 feet below, and received injuries from which he died an hour later. The provision of shaft harness would have prevented the accident. Inspection and inquiry made.

Fatal Accidents, 1912—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			IN SHAFTS—*contd.*			
			Falling from part of the way down—*concld.*			
71	25th May, 12 Noon.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway .	Kareem, (*m.*), 22, *Pack coolie.*	Coal .	Deceased was climbing a haulage road, rising at an angle of 52°, against orders, when he slipped and fell a distance of about 250 feet. He was dead when found. Inspection and inquiry made.
72	8th June, 10-30 A.M.	Charanpur Mine, Charanpur P. O., Bengal.	Reliance Coal Co., Ld. .	Gora Manjhi, (*m.*), 17, *Miner.*	Coal .	Deceased was descending the shaft in a cage together with another miner and the pumpman. The pumpman got out at the top seam at 119 feet and the cage went on down to the bottom seam at 269 feet. Deceased fell out somewhere, but the cause of the accident is unknown, for the other miner went away from the shaft at once and has not been heard of since. There were no safety chains on the cage to prevent persons falling out. Inspection and inquiry made.
73	18th August, 4-30 A.M.	Bejdih Mine, Sitarampur P. O., Bengal.	Equitable Coal Co., Ld. .	Santo Panjabi, (*m.*), 22, *Coolie.*	Coal .	While deceased and two other men were making joints in a steam pipe range a screwed flange gave way, six pipe lengths further up the shaft, causing the pipe to drop about 5 or 6 feet. When this occurred deceased was standing on the top of the cage with one arm round the pipe and was screwing up a nut with his other hand. It seems that the falling pipes caused him to fall off the cage to the bottom of the shaft, a distance of about 200 feet. Although life lines were attached to the cage none of the men had one on at the time of the accident. The wrought-iron pipe and flange were not properly made. Inspection and inquiry made.
74	26th October, 6 P.M.	West Ghusik Mine, Kalipahari P. O., Bengal.	West Ghusik Coal Concern.	Bhoju Manjhi, (*m.*), 35, Chiru Manjhi, (*m.*), 30, *Coal-cutters.* Lakhi Manjhian, (*f.*), 12, *Carrier.*	Coal .	In a shaft, 124 feet deep, where winding with double buckets is practised it is the custom when persons ride to use only one bucket and permit the other rope and chains to run loose. Whilst four persons were descending one of the loose chains attached to the ascending rope caught in one of the hooks of the descending bucket, and the latter was drawn up the shaft. Three of the occupants were precipitated to the bottom of the shaft. Two were killed on the spot and the third died an hour afterwards. One woman contrived to cling to the bucket and was drawn safely to the surface. Inspection and inquiry made.
75	13th December, 8 P.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway.	Safdarali, (*m.*), 22, *Miner.*	Coal .	After getting out of the tram at a level landing deceased was going across a hinged pair of drop rails when he fell between the rails and a fixed girder, down a distance of 200 feet, on a slope of 50°, and was killed.

			Things falling from the surface—(*7 deaths*).			
76	19th April, 6 A.M.	Sripur Mine, Kalipahari P. O., Bengal.	Lodna Colliery Company, Ld.	Bali Ram Mahara, (*m.*), 37, Karu Mahara, (*m.*), 33, Ramu Mahara, (*m.*), 45, Lekhu Mahara, (*m.*), 20, *Sinkers.*	Coal	A sinking hoppit of the self-tipping type with an overall diameter of 4′ $4\frac{1}{2}$″ containing a ton of stone collided with the frame of the folding door, the opening of which was 5′ $8\frac{1}{2}$″ × 5′ 6″ at the surface. The catch locking the bow was damaged and the hoppit overturned discharging its contents into the shaft where 18 sinkers were at work. Three of them were killed outright, one died an hour later and three others were seriously injured. Inspection and inquiry made. *See Report, page 8.*
77	27th April, 6 A.M.	Anantapur Mine, Morriston P. O., Madras.	Anantapur Gold Fields, Ld.	Peeran Saheb, (*m.*), 36, *Hand jumper coolie.*	Gold	The winding driver unclutched, with the empty bucket at surface, not thinking the load would be sufficient to turn the drum. The bucket fell 100 feet and struck deceased. The injury was not at first considered serious.
78	27th December, 5-30 A.M.	Narsamuda Mine, Asansol P. O., Bengal.	Sitarampur Coal Co., Ld.	Prem Hazam, (*m.*), 25, *Stone-cutter.*	Coal	Owing to the sinking kibble fouling the water shoot, a baulk, 4′ × 10″ × 5″, on which the kibble landed and which was loose, was precipitated down the shaft and struck deceased, killing him instantly. Another man was injured. Inspection and inquiry made.
79	27th December, 7 P.M.	Angarpatra Mine, Katrasgarh P. O., Bihar and Orissa.	Trigunait Brothers	Chatlal Singh, (*m.*), 40, *Pit sinker.*	Coal	Whilst at work with a gang of sinkers, at the bottom of a sinking shaft, deceased was struck on the head by a stone which fell from a basket of rock which was being raised to the surface by a gang of coolies pulling a rope. He died a few hours later whilst on the way to hospital. Inspection and inquiry made. *See Report, page 9.*
			Things falling from part of the way down—(*2 deaths*).			
80	10th May, 6 A.M.	Dishargarh Mine, Dishargarh P. O., Bengal.	Equitable Coal Co., Ld.	Mohan Bauri, (*m.*), 35, *Miner.*	Coal	While deceased and two women were descending a shaft which was 462 feet deep a stone fell from some place in the shaft on to the bonnet of the cage. The bonnet was bent in and deceased's head was injured by it. He died in three hours. The spot from where the stone fell could not be located. Inspection and inquiry made.
81	10th May, 7 A.M.	Rakha Hills Mine, Rakha Mines P. O., Bihar and Orissa.	Cape Copper Co., Ld.	Baser, (*m.*), 16, *Muck coolie.*	Copper	A stay plank, 4′ × 8″ × 1″, holding a suction pipe fell and struck deceased on the head while he was at work at the shaft bottom 20 feet below and killed him. Inspection and inquiry made.
			Suffocation by gases—(*5 deaths*).			
82	4th May, 9 A.M.	Harold's No. 3 Mine, Sharigh P. O., Baluchistan.	W. C. Clements	Dosambi, (*m.*), 38, *Sub-jamadar.*	Coal	Deceased, without permission, entered a disused stenton containing black damp and was overcome. After strenuous and gallant attempts at rescue, his body was recovered about 24 hours later. Inspection and inquiry made.
83	10th May, 4-30 A.M.	Namdang Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Charsombey Mekrani, (*m.*), 30, Omar Mekrani, (*m.*), 30, Nawab Mekrani, (*m.*), 30, *Coal-cutters.*	Coal	Deceased were suffocated by the smoke and fumes from an underground fire which broke out one night owing to spontaneous combustion. The fan had been allowed by the fan and boiler attendants to drop to half speed and an important ventilation door was found afterwards to have been detached from its frame. These causes operated together to drive the smoke on to the deceased. Inspection and inquiry made.
84	21st September, 12 Midnight.	Sanctoria Mine, Dishargarh P. O., Bengal.	Bengal Coal Co., Ld.	Kunja Lall Muchi, (*m.*), 24, *Stone-cutter.*	Coal	Deceased had been excavating a foundation for a brick stopping in the rise workings. For some unknown reason he crossed a line of fences at No. 7 pit level and also fences lower down and was suffocated by carbonic acid gas in the old dip workings. Inspection and inquiry made.

Fatal Accidents, 1912—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			IN SHAFTS—*contd.*			
			Explosives—(*8 deaths*).			
85	23rd January, 10-30 A.M.	North Kustore Mine, Kusunda P. O., Bihar and Orissa.	Kusunda and Nayadi Collieries, Ld.	Munshi Halwai, (*m.*), 25, *Onsetter.*	Coal . .	Although properly warned deceased and another man who was injured neglected to take shelter when a round of five dynamite shots was being fired at a distance of 72 feet from them. They were struck by the flying debris, deceased being killed on the spot. Inspection and inquiry made.
86	9th October, Between 3 and 4 P.M.	Corundum Mines, Kandampalaiyam P. O., Madras.	Govindji Odavaji Sait .	Nachayi, (*f.*), 18, *Coolie.*	Corundum .	Deceased was standing 300 feet from a pit in which the shot hole was being fired. A small piece of stone blown out of the pit struck her on the head causing injuries from which she died in two days.
87	22nd October, 1-35 P.M.	Phularibad Mine, Jharia P. O., Bihar and Orissa.	Khas Jharia Coal Co. .	Nobi Bux Meah, (*m.*), 19, *Pump khalasi.* Bhatua Lohar, (*m.*), 35, *Tindel.* Gunpat Rai, (*m.*), 40, *Sinking sirdar.*	Coal . .	Gunpat Rai was testing detonators with a galvanometer, having dynamite near at hand. The other two deceased were sitting near him. An explosion occurred. The other two deceased were killed immediately and Gunpat Rai died in three hours. Inspection and inquiry made. *See Report, page 9.*
88	27th October, 11-45 A.M.	Jamgram Mine, Panuria P. O., Bengal.	Barakar Coal Co., Ld. .	Bhagwan Mahato, (*m.*), 28, Kaila Singh, (*m.*), 27, *Sinkers.*	Coal . .	Whilst a gang of twelve sinkers was engaged in loading rock and dressing the sides of a sinking shaft at a depth of about 100 feet an explosion occurred killing the two deceased and seriously injuring a third man. It is probable that the occurrence was due to an unsuspected missfire of dynamite. It was the practice to fire all shots electrically from the surface. Inspection and inquiry made.
89	21st November, 5 A.M.	Jamuria Mine, Nandi P. O., Bengal.	Equitable Coal Co., Ld. .	Mahabir Passi, (*m.*), 46, *Miner.*	Coal . .	Deceased lighted the fuse of a shot and told his mate to get out of the way. When the mate returned he could not see deceased and thought he had gone up the pit. The loading kamins came in to fill the coal and after filling five tubs discovered deceased dead under the coal. There was no evidence to show why deceased was caught by the shot. Inspection and inquiry made.
			Irruptions of water or falling into water.—(*23 deaths*).			
90	11th July, 4-30 P.M.	Phularitand Mine, Katrasgarh P. O., Bihar and Orissa.	Phularitand Coal Co., Ld.	Hari Manjhi, (*m.*), 45, Naran Manjhi, (*m.*), 35, Salku Manjhi, (*m.*), 35, Berbal Rajwar, (*m.*), 35, Haria Napit, (*m.*), 40, *Coal-cutters.* Tejua Napit, (*m.*), 13, *Bailing coolie.* Bara Manjhi, (*m.*), 40, Samer Manjhi, (*m.*), 35,	Coal . .	Whilst the deceased were working underground a heavy downpour of rain flooded the surface. A bank about a quarter of a mile away burst and the water unable to escape through a bridge near the incline poured into the workings. The rush of water was so great that they were unable to effect an escape and were drowned. Inspection and inquiry made. *See Report, page 9.*

				Madan Manjhi, (*m.*), 38, Chhatu Manjhi, (*m.*), 35, *Coal-cutters.* Furia Muchini, (*f.*), 16, Karmi Manjhian, (*f.*), 25, Nunki Manjhian, (*f.*), 25, Dulia Manjhian, (*f.*), 19, Charki Manjhian, (*f.*), 23, *Coal-carriers.* Fulia Bhuiani, (*f.*), 40, Bhudia Bhuiani, (*f.*), 15, *Bailing women.* Barki Manjhian, (*f.*), 32, *Coal-carrier.* Lakhinarayan Manjhi, (*m.*), 30, *Miner.* Taju Napit, (*m.*), 12, *Bailing coolie.* 3 unknown, (*f.*), 28, 30, 32, *Coal-carriers.*		
			HAULAGE—(*16 deaths*).			
91	5th January, 3 A.M.	Jamadoba Mine, Jamadoba P. O., Bihar and Orissa.	Indian Collieries Syndicate, Ld.	Karamdhari Mahato, (*m.*), 30, *Hookman.*	Coal	Whilst attempting to jump on a moving train of loaded tubs deceased was crushed between the tubs and the side of the road receiving injuries from which he died an hour later. Inspection and inquiry made.
92	19th January, 1-30 A.M.	Minto No. 1 Mine, Nandi P. O., Bengal.	Minto Coal Co., Ld.	Nanku Passi, (*m.*), 30, *Sirdar.*	Coal	A set of tubs which were standing and being loaded on a gradient of 1 in 13 being insufficiently spragged were set loose by a tub bumping into them from the rear. Deceased was knocked over by them and sustained a fractured hip. He died from shock twelve days later. He was responsible for seeing that the tubs were safely secured. Inspection and inquiry made.
93	10th February, 8-30 P.M.	Noonoodih Mine, Jamadoba P. O., Bihar and Orissa.	Bengal Iron and Steel Co., Ld.	Tripura Baurin, (*f.*), 30, Kheti Baurin, (*f.*), 25, *Dust women.*	Coal	Owing to a missed coupling two empty tubs ran wild for 300 feet down a haulage slope and struck the two deceased. Tripura Baurin died on the following day and Kheti Baurin sixteen days later. There was no second stop block or runaway point although attention had been drawn previously to this matter. Inspection and inquiry made.
94	17th February, 4 A.M.	New Tetturia Mine, Katrasgarh P. O., Bihar and Orissa.	New Tetturia Coal Co., Ld.	Abdul Khan, (*m.*), 30, *Bottom hookman.*	Coal	Owing to a broken haulage rope a train of ten tubs ran back down a slope of 1 in 7. Deceased was knocked over and killed on the spot. The fracture of the rope appears to have been due to the use of too large a capping. Inspection and inquiry made.
95	18th February, 10 A.M.	Jamadoba Mine, Jamadoba P. O., Bihar and Orissa.	Indian Collieries Syndicate, Ld.	Aina Manjhi, (*m.*), 14, *Coal-carrier.*	Coal	Owing to failure to sprag a train of seven loaded coal tubs, the train ran wild down a slight grade. The front tub tilted up and its contents were thrown out. Deceased was standing at the side of the road near a refuge hole and was struck on the head by a piece of flying coal about 10 lbs. in weight. His skull was fractured and he died on the spot. Inspection and inquiry made.
96	16th March, 2-30 P.M.	Murulidih Mine, Mohoda P. O., Bihar and Orissa.	Bengal Coal Co., Ld.	Bisu Mahato, (*m.*), 24, *Tub-pusher.*	Coal	Whilst a train of nine loaded tubs was being hauled up a slope the hook of a draw-bar broke and the tubs ran back into the mine. Deceased was killed and another man sustained a compound fracture of the leg. Inspection and inquiry made.

Fatal Accidents, 1912—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			HAULAGE—*concld.*			
97	20th April, 11 P.M.	Ekra Khas Mine, Bansjora P. O., Bihar and Orissa.	Maharaja Monindra Chandra Nandi.	Sarbaria Manjhi, (*m.*), 45, *Coal-cutter.*	Coal	Thirteen empty tubs were standing against a wooden buffer on a haulage road dipping at 1 in 4. Whilst they were being loaded with coal the buffer broke and the tubs ran down the slope and crushed deceased against the side of the road. He succumbed to his injuries three days later. Inspection and inquiry made.
98	8th May, 2-30 A.M.	Mohpani Mine, Mohpani P. O., Central Provinces.	Great Indian Peninsula Railway.	Binnini, (*f.*), 30, *Coal-carrier.*	Coal	A set of five full tubs started off the engine bank with too much slack rope. The rope broke and the tubs ran wild. One tub was driven through the bottom landing and caught deceased who was lying there. She was killed on the spot.
99	30th May, 1 P.M.	Bhalgora Mine, Jharia P. O., Bihar and Orissa.	Bhalgora Coal Co., Ld.	Jogu Bhuia, (*m.*), 14, *Coal-carrier.*	Coal	Whilst a train of empty tubs was entering a landing the tubs derailed and deceased, who had run forward to claim a tub, was crushed to death against the side of the road by one of the derailed tubs. Inspection and inquiry made.
100	31st May, 6-30 P.M.	Ena Mine, Dhanbaid P. O., Bihar and Orissa.	North-West Coal Co., Ld.	Parbatia, (*f.*), 35, *Coal dust loader.*	Coal	Whilst loading coal tubs in a siding underground deceased was crushed between two tubs, one of which was allowed to run uncontrolled into the siding. She sustained a compound fracture of the leg and died from shock two days later. Inspection and inquiry made.
101	4th June, 11-30 P.M.	Noonoodih Mine, Jamadoba P. O., Bihar and Orissa.	Bengal Iron and Steel Co., Ld.	Musahib Kahal, (*m.*), 22, *Hookman.*	Coal	Deceased was standing on a dip haulage slope ready to assist the empty train over a bad crossing when a draw-bar broke and eight tubs ran wild. He was crushed against the side of the road and received injuries from which he died twelve hours later. Inspection and inquiry made.
102	21st August, 5-30 P.M.	Bhutgoria Mine, Jamadoba P. O., Bihar and Orissa.	Aldih Coal Co., Ld.	Chowdaria Gope, (*m.*), 26, *Trolleyman.*	Coal	Deceased omitted to sprag the last tub left in a siding and whilst he was taking another tub down a grade, varying from 1 in 40 to 1 in 25, the last tub ran wild behind him for a distance of 150 feet and he was crushed between the two tubs, receiving injuries from which he died half an hour later. Inspection and inquiry made.
103	26th September, 6 P.M.	Dishargarh Mine, Dishargarh P. O., Bengal.	Equitable Coal Co., Ld.	Sumai Manjhi, (*m.*), 25, *Onsetter.*	Coal	Deceased had just brought three out of four tubs to the pit bottom and had neglected to sprag the fourth tub which followed on and jammed his head between the third and fourth tubs. He died two hours afterwards. Inspection and inquiry made.
104	4th December, 10 P.M.	Khuldiha Mine, Giridih P. O., Bihar and Orissa.	Bengal Coal Co., Ld.	Bhattu Musohar, (*m.*), 18, *Coal-carrier.*	Coal	Deceased was loading a tub on a siding where loading was forbidden. Whilst another tub was being lowered by hand into the siding down a grade of 1 in 15, a wooden sprag broke and the tub ran wild for a distance of 70 feet. Deceased was knocked down and received injuries from which he died. Inspection and inquiry made.

105	13th December, 9 A.M.	Joba Mine, Kalipahari P. O., Bengal.	Eastern Coal Co., Ld.	Mungri Manjhian, (*f.*), 40, *Dust kamin.*	Coal	Deceased and another dust kamin were taking a loaded tub down an incline of about 1 in 12 when a full tub was started by some means from the top and coming down behind them caught deceased between the buffers and broke her leg just below the knee. She died of shock while being taken to hospital. Inspection and inquiry made.
			UNDERGROUND MACHINERY—(*1 death.*)			
106	10th July, 7 A.M.	Lutchipur Mine, Sitarampur P. O., Bengal.	Damuda Coal Co., Ld.	Dappu Bauri, (*m.*), 27, *Pump khalasi.*	Coal	While attempting to open the ordinary screwed cover of a $2\frac{1}{2}$" stop valve on a steam pipe communicating with a pump the cover flew off and scalded deceased who died from the effects twenty-three hours later. It was subsequently discovered that the spindle had jammed in the cover. Inspection and inquiry made.
			SUNDRIES UNDERGROUND—(*6 deaths.*)			
107	21st January, 8-30 A.M.	Sudamdih Mine, Bhujudih P. O., Bihar and Orissa.	Empire Coal Co., Ld.	Jagu Ganju, (*m.*), 20, *Labourer.*	Coal	Whilst taking refuge in a side gallery from a train of tubs which was descending a haulage incline deceased fell 40 feet over an unfenced ledge where floor coal had been excavated. He died four hours later. Inspection and inquiry made.
108	13th March, 4-30 P.M.	Benahir Mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ld.	Sripati Surak, (*m.*), 32, *Coal-cutter.*	Coal	Deceased mistook the road to his working place and entered a disused tram road pushing a tub in front of him. At the end of the line he pushed the tub through a fence and fell with the tub to a level 10 feet below, where floor coal had been cut. He was found dead from internal injuries. Inspection and inquiry made.
109	13th August, 10 A.M.	North Anantapur Mine, Morriston P. O., Madras.	North Anantapur Gold Mines, Ld.	Thangadapalle Papanan, (*m.*), 28, *Coolie.*	Gold	Deceased was passing along the 150′ level and in getting out of the way of a tram wagon coming from the opposite direction fell down a winze which was 50 feet deep.
110	12th September, 6 P.M.	Central Kurkend Mine, Kusunda P. O., Bihar and Orissa.	Central Kurkend Coal Co., Ld.	Khuli Turin, (*f.*), 13, *Coal-carrier.*	Coal	Whilst throwing a large lump of coal into a tub deceased misjudged the distance with the result that the coal struck the outside of the tub and fell upon her foot. The toes were severed and she succumbed to shock on the following day. Inspection and inquiry made.
111	7th December, Between 10 and 11 P.M.	Alguda Mine. Sharigh P. O., Baluchistan.	Baluchistan Coal Co., Ld.	Din Mahomed, (*m.*), 30, *Miner.*	Coal	While deceased (in front) and another man (behind) were taking a loaded tub of coal from their working place, deceased went ahead to clear the line after which he told the other man to let the tub go. At that moment deceased's lamp went out and he was knocked down by the tub, dying shortly after.
112	25th December, 5 P.M.	Serampur Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Raghu Gope, (*m.*), 35, *Coal-cutter.*	Coal	Deceased was standing on a ladder making some side safe when a piece of coal rolled against the ladder causing him to fall. He died from shock.
			ON SURFACE RAILWAYS AND TRAMWAYS BELONGING TO THE MINE—(7 deaths).			
113	14th February, 1-30 P.M.	Charanpur Mine, Charanpur P. O., Bengal.	Reliance Coal Co., Ld.	Bhudan Dhungar, (*m.*), 10, *Bellows boy.*	Coal	Deceased was run over by a colliery locomotive. It is presumed that he jumped on an empty truck, which the locomotive was taking into the siding, and was knocked off against the retaining wall of the loading platform. The wheels passed over his neck and killed him. Inspection and inquiry made.

Fatal Accidents, 1912—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			ON SURFACE RAILWAYS AND TRAMWAYS BELONGING TO THE MINE—*concld.*			
114	5th June, 7 A.M.	Bansjora Mine, Bansjora P. O., Bihar and Orissa.	Bansjora Coal Co., Ld.	Sadda Singh, (*m.*), 40, *Labourer.*	Coal .	Deceased was one of a gang of Panjabi labourers employed in transporting a boiler. He was riding on a trolley in front of another trolley carrying a crab winch. The two trollies were coupled together and ran down a grade of about 1 in 40 colliding with a train of loaded tubs at the foot of the slope. He was thrown off and the crab winch fell on top of him causing injuries from which he died ten hours later. Inspection and inquiry made.
115	15th July, 4-30 P.M.	Kodur Mine, Chipurupalle P. O., Madras.	Vizianagram Mining Co., Ld.	Yempadapu Musalayya, (*m.*), 47, *Coolie.*	Manganese .	Deceased was caught by the legs between two trucks while tramming spoil. Both legs were fractured and he died three days afterwards.
116	15th August, 5-45 P.M.	Rakha Hills Mine, Rakha Mines P. O., Bihar and Orissa.	Cape Copper Co., Ld.	Chunu, (*m.*), 55, *Coolie.*	Copper .	Some alterations were being made on a double road incline and the assistant surveyor who was in charge ordered two men to take a tram frame up the road to test it by running it down. The two men got on the trolley which ran away and in jumping off they upset it and it struck deceased who was standing on the other line. He died the next day from injuries received. Inspection and inquiry made.
117	19th October, 10 A.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway.	Mir Zaman, (*m.*), 18, *Coolie.*	Coal . .	Deceased, against orders, attempted to jump on one of some wagons which were being drawn by a mule, when he slipped and fell between the wagons, receiving injuries from which he died two days later.
118	28th November, 6-30 A.M.	Jamadoba Mine, Jamadoba P. O., Bihar and Orissa.	Indian Collieries Syndicate, Ld.	Jheri Mahato, (*m.*), 16, *Locomotive fireman.*	Coal . .	Deceased whilst sitting on the buffer of a locomotive and sanding the track fell on the line and was run over. He was killed on the spot. Inspection and inquiry made.
119	28th December, 5 P.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway	Dil Mahomed, (*m.*), 50, *Surface coolie.*	Coal . .	Instead of waiting, as his companions did, outside the tunnel through which the colliery locomotive was passing deceased said he would find room to stand at the side. His chest was crushed between the locomotive tank and the side of the tunnel. He died while being taken to hospital.
			MISCELLANEOUS ON SURFACE—(*15 deaths*).			
120	4th January, 9 A.M.	Kujama Mine, Jharia P. O., Bihar and Orissa.	L. H. Das and Co. . .	Punia Kamin, (*f.*), 28, *Coal-carrier.*	Coal . .	Deceased slipped and fell over the edge of an unfenced bridge carrying a tram line over a river. She sustained a fractured thigh and died a month afterwards. Inspection and inquiry made.
121	21st February, 11-30 A.M.	Serampur Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway .	Fagu Manjhi, (*m.*), 45, *Tindel sirdar.*	Coal . .	While dismantling a short pipe, weighing 24 lbs., which was not secured by any rope or chain, on a water cooling tower at an elevation of 18 feet deceased lost his balance and fell into an empty tank. He never recovered consciousness and died the following day. Inspection and inquiry made.

122	18th March, 11-30 A.M.	Burra Dhemo Mine, Sitarampur P. O., Bengal.	Burra Dhemo Coal Co., Ld.	Mether Chamar, (*m.*), 55, *Surface coolie.*	Coal	A flue wall of a Lancashire boiler was being taken down when some brick work, about 3′ × 2′ × 1′ 3″, collapsed and crushed deceased's head against the side of the boiler, killing him instantaneously. The mortar of the brick work was found to be inferior. Inspection and inquiry made.
123	25th April, 1-45 P.M.	Serampur Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Rewa Turi, (*m.*), 50, *Tindel sirdar.*	Coal	Deceased was walking along the 10″ side of a 10″ × 5″ girder and fell a distance of 22 feet. He died in hospital the next day. Inspection and inquiry made.
124	1st June, 2-15 P.M.	Charanpur Mine, Charanpur P. O., Bengal.	Apcar & Co.	Khamon Dome, (*m.*), 26, Dalu Bauri, (*m.*), 38, *Pit banksmen.*	Coal	While a storm of unusual severity was in progress the deceased and two other men took refuge in an engine-house. The corrugated iron roof was lifted off by the wind. The other two men jumped under the drum of the engine but the two deceased ran out of the engine-house and were buried under the collapse of the front wall. Khamon Dome was killed on the spot and Dalu Bauri died six hours afterwards. Inspection and inquiry made.
125	6th August, 12 Noon.	Hermyingyi Mine, Tavoy P. O., Burma.	Hermyingyi Mining Co., Ld.	Leo Cheon, (*m.*), 32, *Coolie.*	Wolfram	Deceased was engaged in erecting scaffolding to carry a pipe line over a rocky gorge in flood. Whilst doing so he slipped and fell into the stream and was killed or drowned. Inspection and inquiry made.
126	14th August, 2 A.M.	Shwebontha Mine, Mogok P. O., Burma.	Burma Ruby Mines, Ld.	Paw Ai Yat, (*m.*), 40, *Coolie.*	Rubies	Deceased was running to get out of the way of a slip of the bank when he collided with a truck and was squeezed up against it by the rush of mud. He died in hospital a few hours later.
127	17th August, 5 P.M.	South Mudidih Mine, Sijua P. O., Bihar and Orissa.	Reliance Coal Co., Ld.	Mangal Dosadh, (*m.*), 65, *Bellowsman.*	Coal	Deceased was a cripple employed as a bellows blower in a workshop on the surface. During a rain storm a wall of sun-dried bricks collapsed and the roof fell in. The other occupants ran out and escaped but deceased was pinned down and received injuries from which he died shortly after. Inspection and inquiry made.
128	7th September, 7-30 P.M.	Muttigurra Mine, Nowagarh P. O., Bihar and Orissa.	Muttigurra Coal Co., Ld.	Bhagia Turin, (*f.*), 45, *Labourer.*	Coal	While crossing a bridge on her way to work she fell over the edge, a distance of 12 feet. Her skull was fractured and she was killed on the spot. Inspection and inquiry made.
129	24th September, 2 P.M.	Jibutil Mine, Morriston P. O., Madras.	Jibutil Gold Mines, Ld.	Venkattasami, (*m.*), 21, *Bricklayer.*	Gold	Deceased was buried under a scaffolding on which he was standing and which collapsed bringing with it part of the gable wall of a building and was killed.
130	29th September, 8 P.M.	Kurhurbari Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Bholi Meah, (*m.*), 35, *Tindel coolie.*	Coal	Deceased and some other coolies were pulling a guide rope at the top of a shaft; they allowed it to run back some feet and deceased was caught in the loop thus formed and got jammed against the handle of the keps and the pillar of the side fence. He died three days later.
131	7th October, 6-30 P.M.	North Anantapur Mine, Morriston P. O., Madras.	North Anantapur Gold Mines, Ld.	Abdul Kadir, (*m.*), 12, *Oiler.*	Gold	Deceased climbed on to the wall of a boiler feed-water tank, 5 ft. high, in order to wash a cloth and fell into the water which was hot. He had no right to be there. He died from scalding two days later.
132	4th November, 11 A.M.	Saltore Mine, Dishargarh P. O., Bihar and Orissa.	Saltore Coal Co., Ld.	Mahon Gope, (*m.*), 25, *Ropeway greaser.*	Coal	As deceased was crossing on an aerial tramway, of which he was the ropeway greaser, he was seen to lean on the outer side of the bucket, presumably to look at a trestle which he was passing. This caused the other side of the bucket to tilt towards the trestle, which it struck. Deceased and the bucket were thrown down to the river bed, 55 feet below. He died in a few minutes. Inspection and inquiry made.
133	18th December, 8-30 A.M.	Gopalpur Mine, Sitarampur P. O., Bengal.	Damuda Coal Co., Ld.	Haru Turi, (*m.*), 28, *Miner.*	Coal	Deceased was found one morning by the boiler attendant at No. 2 Incline. It is presumed that he went to bathe in the boiler feed-water tank and was seized by a fit and fell in and was drowned. The water was over 6½ feet deep. Inspection and inquiry made.

Fatal Accidents, 1912—*contd.*

Serial number.	Date and hour of accident.	Name and situaton of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Reason for exclusion.	Cause of accident and remarks.
			DEATHS NOT INCLUDED IN THE STATISTICS—(*24 deaths*).				
1	15th January, 8-30 A.M.	Sutikdih Mine, Bhujudih P. O., Bihar and Orissa.	Sutikdih Coal Co., Ld.	Bison Lohar, (*m.*), 3.	Coal	Not employed.	While the deceased child was by the fireside his clothes caught fire. He died from heart failure.
2	20th February, Not Known.	New Khas Jharia Mine, Jharia P. O., Bihar and Orissa.	Ramjus Agarwala	Kadu Kaiyat, (*f.*), 23.	Coal	Not employed	Deceased's body was found in a well near the mine. Foul play was suspected. Inspection and inquiry made.
3	29th March, 1 P.M.	Nandi Mine, Nandi P. O., Bengal.	Adjai Coal Co., Ld.	Suru Bourin, (*f.*), 7.	Coal	Not employed	The deceased child fell into a boiler feed-water tank containing water to the depth of 3′ 11″. It is surmised that she climbed upon the protection wall by way of an ash heap, which reduced the height of the wall to 2′ 4″, to get a drink of water and in leaning over lost her balance. Her body was found in the tank. Inspection and inquiry made.
4	30th March, 9-30 A.M.	Kuordih Mine, Kalipahari P. O., Bengal.	Kuordih Coal Co., Ld.	Surabala Kora, (*f.*), 3.	Coal	Not employed	A piece of roof coal, measuring 7′ × 7′ × 1½′ thick, suddenly fell while a miner was cutting at one side of it and swayed out the props that were supporting it. One of the props caught deceased over the heart and killed her outright. She had just been brought into the mine by her parents. Inspection and inquiry made.
5	9th April, 11-30 A.M.	Kurhurbari Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Bhagia Burhin, (*f.*), 3½.	Coal	Not employed	Deceased was drowned in a pool of water at the entrance to an old incline which was fenced off.
6	11th April, 2-30 P.M.	Charanpur Mine, Charanpur P. O., Bengal.	Apcar & Co.	Kalibash Kasarwani Bania, (*f.*), 50.	Coal	Not employed	Deceased was crossing a tram line looking in the opposite direction when a colliery locomotive and three tubs ran over her. The engineman stated that he whistled and that she paid no attention. She died in hospital.
7	18th April, 5-30 A.M.	Narsamuda Mine, Asansol P. O., Bengal.	Sitarampur Coal Co., Ld.	Tulsi Manjhian, (*f.*), 27, *Coal-carrier.*	Coal	Not a mining accident.	While drawing water from a village well, the top of which was flush with the ground, the deceased appears to have slipped, being pitched headlong into the well. She was drowned despite early attempts at rescue. Inspection and inquiry made.

8	18th April, 12-30 P.M.	Lutchipur Mine, Sitarampur P. O., Bengal.	Damuda Coal Co., Ld.	Punia Musharin, (*f.*), 8.	Coal	Not employed	The deceased child was run over by some empty wagons as she was crossing the railway siding belonging to the mine. It is surmised that some children lifted the brake or brakes of the wagons which allowed them to run uncontrolled down a grade. Inspection and inquiry made.
9	21st April, 6 P.M.	Sibpur Mine, Charanpur P. O., Bengal.	Katras Jharia Coal Co., Ld.	Phudni Korin, (*f.*), 30, *Coal-carrier*. Futchi Korin, (*f.*), 4, Rakhal Kora, (*m.*), 2.	Coal	Not part of a mine.	During a violent gale the roof of a hut, in which two children were lying, flew off and fell upon a fire, situated outside, at which the mother of the children was cooking. It fell across the doorway and caught fire. The mother entered the hut with the object of rescuing her children, but was prevented by the flames from returning. They were all severely burnt and died from shock shortly afterwards. Inspection and inquiry made.
10	21st April, 6 P.M.	Bhutgoria Mine, Jamadoba P. O., Bihar and Orissa.	Aldih Coal Co., Ld.	Rajang Mahato, (*m.*), 25.	Coal	Not employed	As deceased was crossing the railway line he got jammed between the buffers of two wagons, one of which was being hand-shunted. He died two days later from internal injuries.
11	13th May, 6 A.M.	Sabanpur Mine, Sabanpur P. O., Bengal.	Bidhu Sekhar Banerji	Thaku Rajwarin, (*f.*), 55.	Coal	Not employed	Deceased was found drowned in a disused and unfenced incline. She was a leper and a beggar and probably committed suicide. Inspection and inquiry made.
12	28th May, 1-30 A.M.	Rajhara Mine, Rajhara P. O., Bihar and Orissa.	Bengal Coal Co., Ld.	Ram Prosad Nunia, (*m.*), 7.	Coal	Not employed	Whilst a miner was robbing coal from the corner of a pillar in fenced off old workings some 15 tons of roof stone fell, leaving a cavity 10′ × 5′ × 4′. Deceased who was the miner's child was killed on the spot and his wife was severely injured. Inspection and inquiry made.
13	5th June, 7 A.M.	Bansjora Mine, Bansjora P. O., Bihar and Orissa.	Bansjora Coal Co., Ld.	Bhukli Kora, (*f.*), 18, *Coal-carrier*.	Coal	Not a mining accident.	Deceased was drowned in an old unfenced quarry, 18 feet deep, which had been abandoned for fifteen years and was used as a reservoir and bathing tank. Inspection and inquiry made.
14	18th June, 3 A.M.	Sudamdih Mine, Bhujudih P. O., Bihar and Orissa.	Sudamdih Coal Co., Ld.	Bhatu Lohar, (*m.*), 55, *Fitter*.	Coal	Not a mining accident.	Deceased was crossing a railway in a drunken state at the time wagons were being shunted. He was run over and killed on the spot.
15	23rd June, 12 Noon.	Mucheridih Mine, Mohoda P. O., Bihar and Orissa.	Mucheridih Coal Co., Ld.	Gaju Bhuia, (*m.*), 2.	Coal	Not a mining accident.	The deceased child was drowned in the foundation cutting of a bridge which was being put in by the District Board at the mine.
16	27th August, 1-30 P.M.	Kendwadih Mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Sorma Baurin, (*f.*), 8.	Coal	Not employed	Whilst bathing the deceased child fell into a boiler feed-water tank and was drowned. The tank was unfenced. Inspection and inquiry made.
17	3rd October, 2 P.M.	Barari Mine, Jamadoba P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Sonai Gorain, (*f.*), 24, *Coal-carrier*	Coal	Not a mining accident.	Deceased was drowned whilst bathing in an old surface cutting 10 feet deep. Inspection and inquiry made.
18	7th October, 1 P.M.	Jharia Khas Mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ld.	Kashi Chamar, (*m.*), 10.	Coal	Not employed	The deceased child was run over by empty wagons during shunting operations and died in three hours.

Fatal Accidents, 1912—*concld.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Reason for exclusion.	Cause of accident and remarks.
			DEATHS NOT INCLUDED IN THE STATISTICS—*concld.*				
19	3rd November, 11 A.M.	Asansol Mine. Asansol P. O., Bengal.	Ghusik and Muslia Collieries, Ld.	Ramjan Sheik, (*m.*), 40.	Coal .	Not employed	Deceased was in the habit of bathing in a disused incline full of water. He was sitting by the side and fell in. He is said to have been able to swim. If so, he was probably seized with sudden illness. The incline was properly fenced. Inspection and inquiry made.
20	3rd December, 6 A.M.	Mundulpur Mine, Nandi P. O., Bengal.	Mundulpur Coal Co., Ld. .	Durga Das Roy, (*m.*), 28, *Contractor.* Radha Raman Mukherji, (*m.*), 18, *Pit sirdar.*	Coal .	Not a mining accident.	The two deceased and another man went to sleep at night in a room where there was a fire. The room was 12′ × 10′ × 10′ having a door and window, both of which were shut. They were discovered next morning. The two deceased were found to be dead. Artificial respiration was employed for nearly six hours in the case of the other man and he recovered. Inspection and inquiry made.
21	28th December, 2-30 P.M.	Charanpur Mine, Charanpur P. O., Bengal.	Reliance Coal Co., Ld. .	Badli Manjhian, (*f.*), 8 months.	Coal .	Not employed	Drowned in an unfenced tank of a Jewell filter.

APPENDIX II—*contd.*

Table No. 2.

Statement of fatal and serious accidents in and about mines regulated by the Indian Mines Act, 1901, during the year 1912.

Province.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS.				SERIOUS ACCIDENTS.				Death-rate per 1,000 persons employed.		
			Number of separate fatal accidents.	Number of deaths.			Number of serious non-fatal accidents.	Number of persons seriously injured.					
				Below ground.	Above ground.	Total deaths.		Below ground.	Above ground.	Total number of persons injured.	Below ground.	Above ground.	Below and above ground.
		A.—COAL.											
Bihar and Orissa	Hazaribagh: Bokaro-Ramgarh.	236	1	1	...	1	...	...	...	...	8·19	...	4·23
	Hazaribagh: Giridih	7,573	6	3	3	6	6	9	3	12	·63	1·05	·79
	Hazaribagh: Jharia	28	...	...	...	...	...	...	...	...	...	...	...
	Manbhum, Jharia	63,414	56	83	5	88	59	49	12	61	2·06	·21	1·38
	„ Raniganj	5,424	3	2	1	3	3	...	3	3	·55	·55	·55
	Sonthal Parganas, Raniganj	28	...	...	...	...	...	...	...	...	...	...	...
	„ Rajmahal	30	...	...	...	...	...	...	...	...	...	...	...
	Palamau, Daltonganj	690	...	...	...	...	...	...	...	...	...	...	...
	Sambalpur, Hingir-Rampur	468	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	77,891	66	89	9	98	68	58	18	76	1·80	·31	1·25
Bengal	Bankura, Raniganj	99	...	...	...	...	...	...	...	...	...	...	...
	Birbhum, „	25	...	...	...	...	...	...	...	...	...	...	...
	Burdwan, „	36,704	30	34	5	39	34	25	11	36	1·41	·39	1·06
	TOTAL	36,828	30	34	5	39	34	25	11	36	1·40	·39	1·05
Central Provinces	Chhindwara, Pench Valley	802	...	...	...	...	1	2	...	2	...	...	...
	Narsinghpur, Mohpani	1,095	1	1	...	1	...	...	...	...	1·44	...	·91
	Chanda, Ballarpur	633	...	...	..	...	1	1	...	1	...	...	...
	TOTAL	2,530	1	1	...	1	2	3	...	3	·55	...	·39
Panjab	Jhelum	680	...	...	...	...	...	...	...	...	...	...	...
	Shahpur	200	...	...	...	...	...	...	...	...	...	...	...
	Mianwali	101	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	981	...	...	...	...	...	...	...	...	...	...	...
Assam	Lakhimpur	2,115	7	9	...	9	1	1	...	1	6·83	...	4·25
Baluchistan	Sibi, Khost, etc.	1,025	9	8	2	10	6	5	1	6	11·52	6·04	9·75
	Loralai, Loralai	20	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	1,045	9	8	2	10	6	5	1	6	11·33	5·89	9·56
North-West Frontier Province.	Hazara	2	...	...	...	...	..	...	...	...	...	...	...
	GRAND TOTAL (COAL)	1,21,392	113	141	16	157	111	92	30	122	1·80	·36	1·29

APPENDIX II—*contd.*

Table No. 2—*contd.*

Statement of fatal and serious accidents in and about mines regulated by the Indian Mines Act, 1901, during the year 1912—*contd.*

Province.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS.				SERIOUS ACCIDENTS.				Death-rate per 1,000 persons employed.		
			Number of separate fatal accidents.	Number of deaths. Below ground.	Above ground.	Total deaths.	Number of serious non-fatal accidents.	Number of persons seriously injured. Below ground.	Above ground.	Total number of persons injured.	Below ground.	Above ground.	Below and above ground.
			B.—MICA.										
Bihar and Orissa	Monghyr	664	...	...	...	...	...	...	...	...	...	...	...
	Hazaribagh	9,905	2	2	...	2	2	4	...	4	·33	...	·20
	Gaya	1,404	...	...	...	...	...	...	...	...	...	...	...
	Total	11,973	2	2	...	2	2	4	...	4	·27	...	·16
Madras	Nellore	4,525	...	...	...	...	2	3	...	3	...	...	...
	Salem	88	...	...	...	...	...	...	...	...	...	...	...
	Total	4,613	...	...	...	...	2	3	...	3	...	...	...
Rajputana	Ajmer-Merwara	435	..	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Mica)	17,021	2	2	...	2	4	7	...	7	·19	...	·11
			C.—MANGANESE.										
Central Provinces	Nagpur	2,697	...	...	...	...	3	...	3	3	...	...	...
	Bhandara	1,463	...	...	...	...	1	...	1	1	...	...	...
	Balaghat	2,236	1	2	...	2	1	...	1	1	1·11	...	·89
	Chhindwara	224	...	...	...	...	...	...	...	...	...	...	...
	Total	6,620	1	2	...	2	5	...	5	5	·44	...	·30
Madras	Vizagapatam	3,041	1	...	1	1	6	2	4	6	...	1·02	·32
Bombay	Panch Mahals	1,371	...	...	...	...	2	...	2	2	...	...	...
	GRAND TOTAL (Manganese)	11,032	2	2	1	3	13	2	11	13	·28	·25	·27
			D.—LIMESTONE.										
Central Provinces	Jabalpur-Katni	2,606	...	...	...	...	...	...	...	...	...	..	...
Panjab	Hoshiarpur	82	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Limestone)	2,688	...	...	...	...	...	...	...	...	...	...	...
			E.—SALT.										
Panjab	Shahpur	38	...	...	...	...	...	...	...	...	...	...	...
	Jhelum	864	...	...	...	...	9	8	1	9	...	...	...
	Mianwali	68	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Salt)	970	...	...	...	...	9	8	1	9	...	...	...

APPENDIX II—*contd.*

Table No. 2—*contd.*

Statement of fatal and serious accidents in and about mines regulated by the Indian Mines Act, 1901, during the year 1912.

Province.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS.				SERIOUS ACCIDENTS.				DEATH-RATE PER 1,000 PERSONS EMPLOYED.		
			Number of separate fatal accidents.	Number of deaths. Below ground.	Above ground.	Total deaths.	Number of serious non-fatal accidents.	Number of persons seriously injured. Below ground.	Above ground.	Total number of persons injured.	Below ground.	Above ground.	Below and above ground.
		F.—GEMS.											
Burma	Mogok (Rubies, etc.)	1,707	1	...	1	1	...	...	...	...	...	1·06	·58
Madras	Kurnool (Diamonds)	12	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Gems)	1,719	1	...	1	1	...	...	...	...	...	1·06	·58
		G.—SLATE.											
Bihar and Orissa	Monghyr	278	...	...	...	...	...	...	...	...	...	...	...
Panjab	Kangra	456	...	...	...	...	...	...	...	...	...	...	...
	Gurgaon	245	...	...	...	...	...	...	...	...	...	...	...
	Total	701	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Slate)	979	...	...	...	...	...	...	...	...	...	...	...
		H.—GOLD.											
Madras	Anantapur	1,756	4	2	2	4	1	...	1	1	3·73	1·63	2·27
		I.—IRON.											
Central Provinces	Jabalpur	40	...	...	...	...	...	...	...	...	...	...	...
Bihar and Orissa	Singhbhum	1,500	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Iron)	1,540	...	...	...	...	...	...	...	...	...	...	...
		J.—WOLFRAM.											
Burma	Tavoy	2,155	7	12	1	13	1	1	...	1	12·38	·84	6·03
Central Provinces	Nagpur	17	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Wolfram).	2,172	7	12	1	13	1	1	...	1	12·23	·84	5·98
		K.—MAGNESITE.											
Madras	Salem	1,125	...	...	...	...	...	...	...	...	...	...	...
		L.—CHROMITE.											
Baluchistan	Quetta-Pishin	9	...	...	...	...	...	...	...	...	...	...	...

APPENDIX II—*contd.*

Table No. 2—*concld.*

Statement of fatal and serious accidents in and about mines regulated by the Indian Mines Act, 1901, during the year 1912.

Province.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS. Number of separate fatal accidents.	FATAL ACCIDENTS. Number of deaths. Below ground.	FATAL ACCIDENTS. Number of deaths. Above ground.	FATAL ACCIDENTS. Number of deaths. Total deaths.	SERIOUS ACCIDENTS. Number of serious non-fatal accidents.	SERIOUS ACCIDENTS. Number of persons seriously injured. Below ground.	SERIOUS ACCIDENTS. Number of persons seriously injured. Above ground.	SERIOUS ACCIDENTS. Number of persons seriously injured. Total number of persons injured.	Death-rate per 1,000 persons employed. Below ground.	Death-rate per 1,000 persons employed. Above ground.	Death-rate per 1,000 persons employed. Below and above ground.
		M.—COPPER ORE.											
Bihar and Orissa	Singhbhum	1,190	2	1	1	2	...	...	...	...	1·68	1·67	1·68
		N.—FULLER'S EARTH.											
Central Provinces	Jabalpur	* ...	...	...	...	...	...	...	...	...	...	...	...
		O.—CLAY.											
Central Provinces	Jabalpur	130	1	2	...	2	...	...	...	...	21·27	...	15·38
		P.—BAUXITE.											
Central Provinces	Jabalpur	42	...	...	...	...	...	...	...	...	...	...	...
		Q.—GALENA.											
Madras	Kurnool	41	...	...	...	...	...	...	...	...	...	...	...
		R.—TIN.											
Burma	Mergui	155	...	...	...	...	...	...	...	...	...	...	...
	Tavoy	† ...	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Tin)	155	...	...	...	...	...	...	...	...	...	...	...
		S.—STEATITE.											
Central Provinces	Jabalpur	72	...	...	...	...	...	...	...	...	...	...	...
		T.—GRAPHITE.											
Madras	Ramnad	12	...	...	...	...	...	...	...	...	...	...	...
		U.—CORUNDUM.											
Madras	Trichinopoly	257	1	1	...	1	...	...	...	...	8·84	...	3·89
		V.—SAMARSKITE.											
Madras	Nellore	‡ ...	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (All minerals).	164,302	133	163	22	185	139	110	43	153	1·57	·36	1·12

* Figures included with those for Limestone.
† Do. do. do. do. Wolfram.
‡ Do. do. do. do. Mica.

APPENDIX II—*contd.*

Table No. 3.

Statement of fatal accidents in mines regulated by the Indian Mines Act, 1901, during the year 1912, classified according to the age and sex of the workers.

Mineral.	Province and mineral field.	Number of separate fatal accidents.	Number of deaths.								Total below and above ground.
			Below ground.				Above ground.				
			Adult males.	Adult females.	Children (under 12).	Total.	Adult males.	Adult females.	Children (under 12).	Total.	
Coal	Baluchistan	9	8	...	...	8	2	...	...	2	10
	Bihar and Orissa — Bokaro-Ramgarh	1	...	1	...	1	...	...	...	...	1
	Bihar and Orissa — Giridih	6	3	...	...	3	3	...	..	3	6
	Bihar and Orissa — Jharia	56	57	26	...	83	3	2	...	5	88
	Bihar and Orissa — Raniganj	3	2	...	...	2	1	...	...	1	3
	Total	66	62	27	...	89	7	2	...	9	98
	Bengal-Burdwan	30	29	5	...	34	4	...	1	5	39
	Central Provinces	1	...	1	...	1	...	...	...	...	1
	Assam	7	9	...	...	9	...	...	..	...	9
	Panjab	...	...	...	...	...	...	...	...	...	...
	Total Coal	113	108	33	...	141	13	2	1	16	157
Mica	Bihar and Orissa	2	1	1	...	2	...	...	...	...	2
	Madras	...	...	..	...	...	...	...	...	...	...
	Total Mica	2	1	1	...	2	...	...	...	...	2
Manganese	Central Provinces	1	...	2	...	2	...	...	...	...	2
	Madras	1	...	...	...	...	1	...	...	1	1
	Total Manganese	2	...	2	...	2	1	...	...	1	3
Gems	Burma	1	...	...	...	...	1	...	...	1	1
Gold	Madras	4	2	...	...	2	2	...	...	2	4
Wolfram	Burma	7	12	...	...	12	1	...	...	1	13
Copper	Bihar and Orissa	2	1	...	...	1	1	...	...	1	2
Clay	Central Provinces	1	1	1	...	2	...	...	...	...	2
Corundum	Madras	1	...	1	...	1	...	...	...	...	1
Grand total, all minerals		133	125	38	...	163	19	2	1	22	185

APPENDIX II—*concld.*

Table No. 4.

Statement of fatal accidents in mines regulated by the Indian Mines Act, 1901, during the year 1912, classified according to cause of accident.

Mineral worked.	Number of separate fatal accidents.	Number of persons killed.											Death-rate per 1,000 persons employed.		
		Explosions of fire-damp.	Falls of roof.	Falls of side.	In shafts.	By explosives.	Suffocation by gases.	Irruptions of water or falling into water.	Haulage.	Miscellaneous below ground.	Surface.	Total deaths.	Below ground.	Above ground.	Below and above ground.
Coal	113	1	35	26	22	7	5	23	16	6	16	157	1·80	·36	1·29
Mica	2	...	...	2	...	...	...	...	...	...	...	2	·19	...	·11
Manganese	2	...	...	2	..	....	...	...	...	...	1	3	·28	·25	·27
Gems	1	...	...	...	...	...	...	...	...	...	1	1	...	1·06	·58
Gold	4	...	...	...	1	...	...	...	...	1	2	4	3·73	1·63	2·27
Wolfram	7	...	...	12	...	...	...	...	...	...	1	13	12·23	·84	5·98
Copper	2	...	...	...	1	...	...	...	...	...	1	2	1·68	1·67	1·68
Clay	1	...	...	2	...	...	...	...	...	...	...	2	21·27	...	15·38
Corundum	1	...	...	...	...	1	...	...	...	...	..	1	8·84	...	3·89
Total 1912	133	1	35	44	24	8	5	23	16	7	22	185	1·57	·36	1·12
Total preceding year.	137	17	51	43	13	7	2	1	19	5	16	174	1·68	·30	1·18
Difference	—4	—16	—16	+1	+11	+1	+3	+22	—3	+2	+6	+11	—·11	+·06	—·06

APPENDIX III.

PROSECUTIONS UNDER THE MINES ACT.

Statement of prosecutions instituted under the Indian Mines Act, 1901, during the year 1912.

Province.	District.	Number of prosecutions.	Number of persons prosecuted.	Number convicted.	Numbers of rules and sections of the Act contravened.	Remarks.
Bihar and Orissa	Manbhum	1	1	1	Section 20, Rule 8.	
		1	1	1	„ „ „ 7.	
		1	1	1	„ „ „ 4 (*b*).	
		1	3	2	„ „ Rules 3, 7, 8, 19 and 20.	
		1	1	1	Section 20, Rules 4, 7 and 14.	
		1	1	1	Section 20, Rules 4, 7 and 14.	
		1	1	1	Notification No. 11793 —103, dated 30th December 1908, Rule 1.	
		1	1	1	Section 20, Rules 7 and 19, and Notification No. 11793—103, dated 30th December 1908, Rule 1.	
		1	1	1	Section 20, Rule 4(*b*).	
		1	1	1	Section 20, Rules 4, 10 and 19.	
		1	1	1	Section 20, Rules 4, 10 and 19.	
		1	1	1	Section 20, Rule 8.	
		1	1	1	„ „ „	
		1	1	1	„ „ „ 15(*a*)	
		1	3	3	„ „ Rules 1, 3, 7, 19, 20, 46 and 51.	
		1	1	...	Section 20, Rules 1, 3, 7, 19, 20 and 51.	Withdrawn.
	Hazaribagh	1	1	1	Section 16.	
		1	1	...	„ „ . .	Withdrawn.
		1	1	1	„ „	
		1	1	...	„ „ . .	Withdrawn.
		1	1	1	Section 20, Rules 2(*e*), 9 and 19.	
		1	3	...	Section 20, Rules 2(*e*), 9 and 19.	Withdrawn.
		1	2	2	Notification No. 11793 —103, dated 30th December 1908, Rule 1.	
Bengal . .	Burdwan .	1	1	1	Notification Nos. 864-68-20, dated 10th March 1904, Rule 19. Notification No. 11793 —103, dated 30th December 1908, Rule 8.	

APPENDIX IV.

MISCELLANEOUS.

Statement No. 1.

List of Inspection Circles.

No. 1 Circle.	No. 2 Circle.	No. 3 Circle.
(*a*) All mines in the district of Manbhum, which are situated west of a line drawn from Adra Junction at mile 175 of the Bengal-Nagpur Railway to Gobindpur at mile 169 on the Grand Trunk Road and continued across the district in each direction, and all mines in the district of Palamau.	(*a*) All mines in the districts of Burdwan and Bankura to the west of a line drawn from mile 131 on the East Indian Railway main line near Asansol to mile 141 on the Ondal loop near Gaurangdi, and continued across the districts in each direction; and all mines in the district of Manbhum east of a line drawn from Adra Junction at mile 175 on the Bengal-Nagpur Railway to Gobindpur at mile 169 on the Grand Trunk Road, and continued across the districts in each direction, and all mines in the districts of Hazaribagh, Gaya, Monghyr, Darjeeling and Ranchi.	(*a*) All mines in the districts of Burdwan and Bankura to the east of a line drawn from mile 131 on the East Indian Railway main line near Asansol to mile 141 on the Ondal loop near Gaurangdi, and continued across the districts in each direction, and all mines in the districts of the Sonthal Parganas, Birbhum, Singhbhum and Sambalpur.
(*b*) All mines in Assam.	(*b*) All mines in Baluchistan.	(*b*) All mines in the Presidency of Bombay.
(*c*) All mines in Burma.	(*c*) All mines in the United Provinces.	(*c*) All mines in the Central Provinces.
	(*d*) All mines in the Panjab.	(*d*) All mines in the Presidency of Madras.
	(*e*) All mines in Ajmer-Merwara.	

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 2.

List of holders of certificates as managers of coal mines in British India.

(*a*) Certificates granted to holders of English certificates of competency.

FIRST CLASS.

NAME.	No. of Indian certificate.	Date of Indian certificate.	No. of English certificate.	Date of English certificate.
Atkinson, Bertram	163	9th December 1912	2203	16th June 1903.
Thompson, Cyril	164	Ditto	3846	13th June 1911.
Crerar, Donald Campbell	165	Ditto	3077	8th January 1908.
Henderson, Gerald Liddell Baker	166	Ditto	3140	11th June 1908.
Crofton, Charles Arthur	167	Ditto	1976	27th February 1902.

(*b*) Certificates of competency.

FIRST CLASS.

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Mitchell, Phillip Thomas	60	16th March 1912.	
Bhattacharji, Surath Nath	61	Ditto.	
Evans, John Henry	62	Ditto.	
Mukherji, Tarak Nath	63	Ditto.	

SECOND CLASS.

Vanderbeck, Percy William	64	18th March 1912.	
White, Edward Beadon Deveria	65	Ditto.	
Mokadam, Baliram Pandarang	66	Ditto.	
Roy, Mani Bhusan	67	Ditto.	
Cornish, Charles Phillip	68	Ditto.	
Dutt, Fanindra Krishna	69	Ditto.	
Payne, James Harold Willoughby	70	Ditto.	
Rayneau, Cyril Alexander	71	Ditto.	
Mayer, Harry	72	Ditto.	
Kanangoe, Manindra Chandra	73	Ditto.	
Engledow, Richard Denis	74	Ditto.	

(*c*) Certificates of service.

SECOND CLASS.

Dutt, Ram Saran	187	9th December 1912.	
Lodha Ram	188	Ditto.	

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 3.

List of Universities and Colleges in England and India approved by the Governor-General in Council for the purposes of Rules 32 and 33 under the Indian Mines Act, 1901.

Name of Institution and Degree or Diploma.	Date.
University of Birmingham in respect of its Degree of B.Sc. in Mining and Diploma in Mining.	11th June 1904.
University College of Bristol in respect of its Senior Diploma in Mining.	16th September 1904.
University of Cambridge in respect of its Diploma in Mining Engineering.	6th June 1905.
University of Durham in respect of its Degree of B.Sc. in Mining	21st December 1903.
Durham College of Science in respect of its Diploma in Mining .	29th June 1904.
University of Glasgow in respect of its Degree and Diploma in Mining.	28th September 1904.
Glasgow and West of Scotland Technical College in respect of its Diploma in Mining.	28th June 1904.
University of Leeds in respect of its Degree of B. Sc. in Mining and Diploma in Mining.	21st November 1904.
University of London in respect of its B.Sc. Degree in Mining for Internal Students, subject to the Degree being endorsed by the University with a certificate of four months' practical experience in a mine.	9th June 1905.
University of London in respect of its B.Sc. Degree in Mining for External Students, subject to the Degree being endorsed by the University with a certificate of four months' practical experience in a Mine.	7th August 1906.
Royal School of Mines in respect of its Associateship in Mining .	24th March 1904.
University of Oxford in respect of its Diploma B. for Colliery Engineers (in Scientific Engineering and Mining subjects).	11th February 1905.
University College of Sheffield in respect of its Diploma in Mining.	15th July 1904.
University College of South Wales and Monmouthshire in respect of its Diploma in Mining.	19th April 1904.
Wigan Mining and Technical College in respect of its Diploma in Mining.	26th August 1904.
Civil Engineering College, Sibpur, in respect of its Diploma in Mining.	22nd February 1907.
Merchant Venturers' Technical College, Bristol, in respect of its Diploma in Mining Engineering.	5th October 1905.
Victoria University of Manchester in respect of its Degree and Certificate of Mining.	14th February 1906.
University College of Nottingham in respect of its Diploma in Mining Engineering.	28th March 1906.
University of Sheffield in respect of its Degree of Bachelor of Engineering. (Mining.)	30th June 1906.
Heriot-Watt College in respect of its Certificate in Mining Engineering.	16th January 1908.
Calcutta University in respect of its Degree of Bachelor of Engineering in the branch of Mining Engineering.	24th September 1910.
Harvard University, Cambridge, Massachusetts, in respect of its Diploma in Mining Engineering.	22nd February 1913.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 4.

SIBPUR COLLEGE.

The Mining Classes.

CIRCULAR.

These classes are attached to the Overseer Section of the Apprentice Department.

General explanation.—The Mining Classes are designed to afford theoretical training in the principles of mining generally, to prepare students for positions of responsibility in coal or metal mines, and in the case of students attending for instruction in coal mining, to qualify them to appear for the examinations of mine managers, as required by the Indian Mines Act, VIII of 1901.

The course at Sibpur for regular mining students will extend over four years. At the end of the second year the sub-overseer examination is held. The specialised instruction in mining at Sibpur is given in the third and fourth years of the college course, according to the attached syllabus and the diploma examination takes place at the end of the fourth year.

The classes are open to both regular students and special students.

Regular students.—Are those who have qualified for admission by passing the sub-overseer examination of the Civil Engineering College, or an equivalent test of other colleges.

Their age limits are 17 years minimum and 19 years maximum on admission.

Special students.—Persons resident in Bengal, who have been employed upon mines, will be admitted as special students under the following conditions :—

(*a*) that they have completed at least two years' practical work upon a mine; and

(*b*) that they have passed (*i*) the B. Final Examination, (*ii*) the Matriculation or Entrance Examination of any Indian University, or (*iii*) any test equivalent to the Middle School Examination of the Code for European Schools.

There is no limit of age for such special students.

All applications for admission from outside candidates should be posted so as to reach the Principal's office by 1st April.

Regular students should apply in the proper form available from the Principal's office.

Special students must provide, (*a*) proof of educational attainments, and (*b*) a statement showing the nature and extent of their employment upon mines and the period thereof, supported by certificates from the mine managers under whom they have worked.

Scholarships awarded by the Government of Bengal.

For regular students.—Two scholarships of Rs. 12 monthly and three of Rs. 6 are provided. These will be awarded on the results of the sub-overseer examination by the Director of Public Instruction on the recommendation of the Principal. Students trained at the Civil Engineering College or any affiliated technical school in Bengal are eligible for these scholarships. If they are on the Reduced fee list, they will be charged full tuition fees.

For special students.—Two scholarships of Rs. 150 monthly for European candidates and two of Rs. 50 monthly for Indian candidates, each tenable for two years, are offered. These will be awarded annually by the Director of Public Instruction on the recommendation of the Mining Advisory Board.

These scholarships are available for candidates who have had at least two years' actual experience of colliery work. They must have passed the Calcutta University Entrance Examination or an equivalent. For Europeans the Middle Scholarship Examination of the Code for European Schools or equivalent is accepted.

There is no limit of age.

Application for these scholarships should be made to the Principal of the Civil Engineering College, when applying for admission.

There is no residential accommodation available at the college for special students, scholarship-holders or otherwise: they must make their own arrangement for board and lodging, and must attend the college daily from 8 A.M. A mid-day meal will be supplied if desired at the college at a definite monthly charge to be fixed by the Principal.

Scholarships awarded by the Government of Eastern Bengal and Assam.

For regular students.—Three of the value of Rs. 15, one being reserved for each of the following classes, namely, European, Muhammadan and Hindu, confined to students domiciled in Assam.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 4—*contd.*

For special students qualified as above.—One of Rs. 30 for an European. Two of Rs. 20—one for a Muhammadan and one for a Hindu. The rates for special students are fixed on the understanding that they will reside at the college hostel. If accommodation is not available, Government are prepared to consider an increase. Applications for these scholarships to be made to the Director of Public Instruction of Assam.

The session begins each year on or about the first Monday in May. The college closes for the long vacation about the first week of August and re-opens about the end of October.

Special students must pass all college test examinations and must appear at the diploma examination held at the end of the course.

The following fees will be charged from special students:—

Caution money deposit.—Rs. 5, which will be returned on leaving the college after deducting any charge-dues owing.

Tuition fee.—Rs. 3 monthly payable for 12 months in the year.

Mid-day meal.—Rs. 10 monthly for Europeans, and Rs. 5 for Indians.

All fees become due on the 15th of the month.

Regular students, who must be residents, will be charged in full the fees noted in the Rules of the Apprentice Department.

A camp of practical mining and surveying will be held for six weeks in the cold weather of each session in the colliery districts.

SYLLABUS OF MINING COURSES.

Course I.

Geology applied to mining.—(One lecture per week).

Classification of rocks: characteristic fossils and economic products of the principal systems.

Structure of rock; foldings, faults, cleavage, formation of mineral veins.

Principles of geological surveying: methods employed in constructing geological maps and sections. Special reference to the geology of India.

Mining Engineering.—(Two lectures per week.)

Boring by hand and power machines.

Sinking and lining shafts; various methods employed in special cases.

Systems of haulage, underground and aboveground, ærial ropeways.

Hoisting, headgear, ropes, safety appliances.

Mining legislation.

Section A.—(One lecture per week.)

Methods of working coal, shafts, pillars, preliminary work, and various methods of working the seams. Special reference to thick coal working as practised in England and different parts of the world.

Shot-firing; coal-cutting by machinery.

Surface subsidence and under-sea working.

Timbering and other supports.

Coal mine plans and sections, connecting surface and underground surveys.

Section B.—(One lecture per week.)

Prospecting for and methods of working mineral veins.

Alluvial mining and open workings.

Hydraulic mining; dredging for gold; ore-beds and deep leads, overhand and underhand stopping.

Hand and power drilling; blasting, timbering.

Metal mine plans.

Course II.

Descriptive Mineralogy.—(One lecture per week).

Physical properties of minerals; description of various ores and fuels; methods of determination.

Prospecting operations.

Mining Engineering.—(Two lectures per week during first-half of session.)

Drainage of mines; adits, levels; pumping machinery; dams; boring against old workings.

Ventilation of mines; natural and artificial ventilation; splitting and regulating air-currents; types of fans; water-gauge and anemometer.

Power-application in a mine; discussion of relative merits of steam, water, compressed air, electricity and oil, as sources of applied power.

Section A.—(One lecture per week.)

Description of gases found in coal mines; colliery explosions; safety lamps; instruments for detecting fire-damp; treatment of men overcome by foul air.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 4—*concld.*

Arrangement of surface works at a colliery; sorting and screening coals; coal-washing, briquette making, coking and bye-products.

Section B.—(One lecture per week).

Surface works of metal mines, sorting, crushing, sizing and concentration of various ores. Modern ore-dressing machinery, and slime tables.

Special reference to treatment of gold, silver, copper, lead and zinc.

Cyanide and Chlorine treatment of slimes.

Statement No. 5.

MINING INSTRUCTION IN BENGAL AND BIHAR AND ORISSA.

The Mining Educational Advisory Board desire that Colliery Managers will kindly publish this information in their collieries. An appeal is also made to them to support the lectures by seeing that members of their colliery staff who are suitable take advantage of the lectures and attend them regularly.

RANIGANJ AND JHARIA COAL-FIELDS.

Lectures will be delivered throughout the session at the following centres :—

1. Lecture room near Sijua station on Tuesdays at 6-30 P.M.
   Lecturer—Mr. B. Starks Field.
2. Lecture room near the Jharia Club on Mondays at 5-30 P.M.
   Lecturer —Mr. J. Wilson, B.Sc.
3. Lecture room at Messrs. Apcar and Company's Charanpur Colliery on Fridays at 5-30 P.M.
   Lecturer—Mr. H. C. Read, B.Sc. (BIRM.)
4. Lecture room near Dishargarh Club on Wednesdays at 5-30 P.M.
   Lecturer—Mr. C. E. Ashcroft, F.G.S.

The course of instruction, consisting of not less than 25 lectures, will commence in the last week in October and end in the following May. An examination will be held on 2nd June 1913, and candidates who pass the examination will receive a certificate recording their success. No candidate will, however, be permitted to sit for the examination, unless he has attended 50 per cent. of the lectures and received 40 per cent. of the marks allotted for home work.

All Europeans and English-speaking Indians are cordially invited to attend.

The following Sub-Committees have been appointed for each centre.

RANIGANJ DISTRICT.

Dishargarh Centre.

Mr. G. C. Leach (Chairman).
„ Glen George.
„ J. Mackintosh.
„ Geo. Miller.
„ F. Owen.
„ M. N. Roy (Begunia).
Babu H. P. Mukherji (Chota Dhemo).
„ D. C. Tarafdar.
The Local Lecturer (Secretary).

Charanpur Centre.

Mr. C. J. E. David (Chairman).
„ S. Heslop.
„ R. Mitchell.
„ E. M. Patterson.
„ A. Russell.
Babu Rajoni Prokash Chuckerbutti.
The Local Lecturer (Secretary).

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 5—*contd.*

JHARIA DISTRICT.

Jharia Centre.	*Sijua Centre.*
The Chief Inspector of Mines (Chairman).	Mr. R. R. Simpson (Chairman).
Mr. T. Adamson.	„ A. Agabeg.
„ R. G. M. Bathgate.	„ E. S. Bennertz.
„ R. J. Browne.	„ J. S. Kean.
„ A. S. Thomson.	Babu Moti Lal Raha.
Babu Bhupati Mukherji.	„ Surendra Nath Sarkar.
„ Sita Nath Dutta.	The Local Lecturer (Secretary).
The Local Lecturer (Secretary).	

Particulars of the Sibpur College Mining Classes and of the scholarships connected therewith may be obtained from the Principal of the College. Instruction is given in Methods of Mining, General Engineering, Mechanics, Surveying, Science, Minera logy and Workshop practice. On completion of the course (4 years for beginners and 2 years for those having previous mining experience and requisite educational qualifications), a diploma is granted to successful students.

SYLLABUS OF THE COURSE OF INSTRUCTION.

THE course will treat principally of the more practical operations in actual mining, **with special reference to India**, and the principles underlying such operations will be thoroughly discussed. Special attention will be paid to the various methods of working thick seams. Sketches illustrating the lectures will be distributed free of charge.

At the close of each lecture, questions will be set for home work.

FIRST-YEAR COURSE.

1. *Geology.*—General structure of the crust of the earth: descriptions of fault, dyke, outcrop, dip, strike, unconformity, etc.; composition and properties of coal; special reference to the coal measures in India: importance of recording results of observations.

2. *Exploration.*—Advantages of borings; driving-through faults, wash-outs, dykes, methods of maintaining the direction and gradient of such drivages.

3. *Boring and winning.*—Different systems of boring; choice of methods; cost of boring; winning coal by inclines, adits, shafts and crosscut.

4. *Sinking.*—Site of colliery; position of shafts, excavation and shape; blasting with use of safety fuse and electric battery; explosives and detonators, their safe storing and handling; sinking and how to deal with difficulties; apparatus and tools used; lining shafts and scaffolding; pit banking arrangements.

5. *Opening out and methods of working, surveying.*—Shaft pillars; arching or supporting the pit bottom; quarrying; pillar and stall; double road stall; long wall; panel systems.

6. *Timbering and supporting.*—Fixing of props and double timber; chocks or cogs; special methods of timbering to withstand pressure from the roof, sides and floor; securing dangerous holes in the roof due to heavy falls; use of iron or steel girders; stowing and packing; arching.

7. *Gases met with in coal mines.*—Their experimental preparation by chemicals, and illustration of their physical and physiological properties; methods of detecting; explosion and gob fires.

8. *Ventilation.*—Natural and artificial methods; coursing the air; use of stoppings, brattices, doors, air bridges, regulators; measuring the quantity of air, use of thermometer, barometer; water-gauge, anemometer; the friction of air in mines and the elementary theory of splitting.

9. *Safety lamps.*—Theory of safety lamps, Sir Humphrey Davy's Experiment; the Davy lamp, the Clanny and Thomas and Williams lamps, the Marsaut and Mueselar lamps; fire-damp detectors.

SECOND-YEAR COURSE.

1. *Mechanical engineering of collieries.*—Winding engines, discussion of the different types, calculation of the dimensions of cylinders, length of stroke, diameter of drum, etc.; strength of winding ropes and chains, detaching hooks, capping winding ropes, care and examination of ropes.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 5—*concld.*

2. *Pumping.*—Importance of a good system; measurement of quantities of water; lifting and forcing pumps; pumps for sinking; temporary and permanent pumps; calculation of dimensions of pumps to perform a given duty, strength of pipes, methods of supporting; different types of joints.

3. *Hauling.*—Tramways, tubs and wagons, conveyance by self-acting inclines; single-rope haulage; main and tail; endless rope; endless chain, calculations concerning inclines, sizes of haulage engines, ropes, etc.; signalling, capping of haulage ropes.

4. *Methods of working and ventilation.*—Revision of First-year Course work, followed by a fuller treatment of these subjects.

5. *Surface arrangements.*—Boilers: Cornish, Lancashire, and water-tube types; boiler fittings, injectors and steam-pipes, etc.; boiler explosions, incrustation, corrosion, and priming; calculations on boilers. Heap steads; arrangement of roads around pit bank; simple screening and sizing.

6. *Transmission of power.*—By steam, compressed air, and electricity; discussing the relative merits of each system.

Text-books recommended :—Peel's or Kerr's Elementary Mining; O'Donoghue's Mining Arithmetic.

W. H. EVERETT,

(Officiating Superintendent of Industries),
Secretary to the Mining Educational Advisory Board,
Writers' Buildings, Calcutta.

Statement No. 6.

LAND ACQUISITION (MINES) ACT, 1885.

Particulars required to be furnished by colliery owners to Local Governments when giving notice under Section IV of the Land Acquisition (Mines) Act, 1885, of their intention to work coal under land acquired for a railway.

(*a*) The name, residence and profession of the person giving the notice.
(*b*) The name of the mine together with that of the village and district in which the mine is situate.
(*c*) The name of the railway line or of the siding and the main line to which the siding is attached, under which the mine is situate.
(*d*) The names of the railway stations and the mileage between which the said siding or the said portion of the railway land, under which the mine is situate, falls.
(*e*) The number and date of the declaration under which the land was acquired.
(*f*) A tracing showing the boundaries of and the area over which the acquired land extends.

CALCUTTA
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8, HASTINGS STREET

Department of Mines, India.

REPORT

OF THE

CHIEF INSPECTOR OF MINES IN INDIA

Under the Indian Mines Act (VIII of 1901)

FOR THE

YEAR ENDING 31st DECEMBER

1913

BY

R. R. SIMPSON, M. Sc.,

Offg. Chief Inspector of Mines in India

CALCUTTA
SUPERINTENDENT GOVERNMENT PRINTING, INDIA
1914

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FROM

R. R. SIMPSON, ESQ., M.SC.,

Officiating Chief Inspector of Mines in India,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
DEPARTMENT OF COMMERCE AND INDUSTRY.

Dated Dhanbaid, 20th June 1914.

SIR,

I HAVE the honour to submit the report upon the inspection of mines in British India for the year ending 31st December 1913.

EXPLANATORY INTRODUCTION.

It is necessary to explain that this is a report relating entirely to the administration of the Indian Mines Act, 1901, and is not a complete statistical review of Indian Mining and analogous industries. It should be remembered in reading the statistics that there must be a considerable output from quarries which are under 20 feet deep; and owing to the exclusion of such places from the scope of the Mines Act, these figures should not be regarded as a complete index to the production of the mineral wealth of the country.

Figures of production of all minerals raised in British India and the Native States, whether from workings under the Act or not, are published annually in the Records of the Geological Survey of India, whilst every five years a Quinquennial Review of the Mineral Production of India is issued by the same Department. The latest review published is that for the years 1904-1908 (Records, Geological Survey of India, Vol. XXXIX). Figures for Mysore, where most of the Indian gold is raised, are given in the report of the Chief Inspector of that Native State, and mineral statistics may also be found in the administrative reports of the various Presidencies, Provinces and States of India.

This report is divided into five sections, *viz.*:—

Section I.—Persons employed.
„ II.—Output of mineral.
„ III.—Accidents.
„ IV.—Prosecutions and additions to the Act.
„ V.—General remarks.

Section I.—Persons employed.

During the year 1913 the average number of persons working in and about the mines regulated by the Indian Mines Act was 181,260, of whom 116,492 worked underground and 64,768 on the surface. One hundred and eleven thousand, nine hundred and forty-six were adult males, 62,961 were adult females, and 6,353 children under 12 years of age. This is an increase of 16,958 workers or 10·32 per cent.

The increase related chiefly to those employed in coal mines, whose numbers increased by 11,650.

This increase is practically the same as that in the number of those working in the coal mines of Bihar and Bengal where, in 1913, 11,196 more persons were employed than in 1912. There was not much complaint of labour shortage in the Jharia coalfield, but in the Raniganj coalfield the difficulty in securing a full complement tends to become more acute yearly.

At the Margherita coal mines in Assam increasing trouble in obtaining suitable recruits for the labour force is being experienced. The new recruits are chiefly Nepalese and Chinese, and their employment renders proper

supervision extremely difficult, as they have no knowledge of the local dialects or of Hindi.

The same difficulty in respect of supervision is even more acute in Tavoy where practically all the underground mining is done by Chinese.

At Kalichedu mica mine in the Nellore district of Madras the experiment of settling a criminal tribe at the mine has been made. The community numbers about 1,500 persons, including women and children, and it forms the largest penal settlement in India. At first it was found that they did not take kindly to manual labour, but as they gained experience they became more willing and proficient. The men are paid from 3 to 5 annas daily and although they do not do as much work as ordinary free labourers yet, in view of the labour scarcity prevailing, their employment is considered to be a success.

Section II.—Output of Mineral.

COAL.

The output again constitutes a record, being 15,486,318 tons. This is an increase of 10·27 per cent. over the output for 1912 when 14,044,368 tons were raised from the mines. Since 1909, when a decrease of 7 per cent. was recorded, the successive annual increases have been 0·83, 5·80, 16·56 and 10·27 per cent. The drop in the rate of increase is probably accounted for by the restricted raisings consequent on the flooding of many mines in Bengal and Bihar during the year when abnormal floods were experienced in the coalfields. The loss of output directly due to the floods will probably be again reflected in the figures for 1914 as many mines are still suffering from the effects of inundation.

Judging from the present prices of first class coal in the market, and from the fact that many coal companies are contracted forward for long periods at remunerative rates the coal industry appears to be in a remarkably healthy condition.

Of the total output 14,876,241 tons or 96·06 per cent. were raised in Bihar and Bengal; the percentages in the previous three years being 94, 94·64 and 95·19, respectively. The increase in these two provinces was 1,446,675 tons, or slightly greater than the increase for the whole of India which was 1,441,950 tons. The increase comes mainly from the Jharia coalfield where there was an increase of nearly one million tons or 12·48 per cent.

Owing to the extent to which the deeper lying areas of the first class seams of coal are burnt by igneous intrusions, as proved by recent sinkings and borings, the rapid expansion of the output of the Jharia coalfield is not likely to be maintained in the near future. There were increases of 7·75 and 10·44 per cent., respectively, in the Raniganj and Giridih coalfields.

The output of the Bokaro-Ramgarh coalfield declined from 5,310 tons to 2,855 tons. The new extension of the Bengal-Nagpur Railway is, however, being rapidly pushed forward, and a large output may be expected from this field within the next few years.

In the provinces other than Bihar and Bengal the only decrease in output occurred in Assam where 270,364 tons were raised. The decrease was 8·85 per cent., and it was due to scarcity of suitable labour. The increased percentages in the other provinces were:—

Central Provinces 0·71 per cent., Baluchistan 15·74 per cent., Panjab 32·89 per cent. and North-West Frontier Province 80 per cent. In the last mentioned province the output is negligible.

The output per person employed during the year was (*a*) below ground 183 tons, and (*b*) above and below ground 116 tons. The figures for the five years preceding were (*a*) 169 and (*b*) 108. Taking each group of coalfields separately these figures were as follows:—Bengal and Bihar (*a*) 186 and 172, (*b*) 118 and 110; the Central Provinces (*a*) 126 and 123, (*b*) 88 and 86; Assam (*a*) 163 and 246, (*b*) 110 and 155; Baluchistan (*a*) 74 and 69, (*b*) 49 and 46, and the Panjab and North-West (*a*) 85 and 45, (*b*) 57 and 27. The output in England in 1912 was 311 tons per person employed below ground, and 251 tons per person employed above and below ground.

MICA.

The increase was not so marked as in the two previous years. The output was 43,650 cwts. as compared with 41,660 cwts. in 1912. The Madras output, in spite of an increase of 816 cwts. from the Salem district, declined by 15·07 per cent. The increase comes mainly from the province of Bihar and Orissa, but the production of Ajmer-Merwara increased from 641 cwts. to 1,673 cwts.

The market for large slabs of good quality and for splittings of fine quality was well maintained, but towards the end of the year the value of smaller grades of stained quality declined. The year closed with heavy stocks of inferior splittings in Europe, and no business in that grade was carried through during the latter half of the year.

The electrical industry, on which the mica market is so largely dependent, was little affected by the general industrial depression in Europe, but appears to be lagging now.

The improvement in mining methods referred to in previous reports is maintained. The superficial nature of the mining is giving way to deeper and more systematic working which is proving that the deposits are not confined to the surface. The uncertainty as to persistency of the deposits which has prevailed in the past is being gradually dissipated by the continuance in size and richness of the veins in depth. This fact is lending stability to the industry, and encouraging capitalists to make permanent provision for the future.

Labour saving devices are being introduced to supplant the old fashioned methods of raising rock and water by manual labour. It is not uncommon to see a string of some twenty coolies raising the produce of three drills whereas by means of simple machinery three coolies might deal with the rock produced by twenty chisels.

Hand drilling continues to find favour with the operators and it seems unlikely to be superseded by mechanical means owing to the damage to the crystals that may follow the use of machine drills, but there is no doubt that the use of double-handed drills employing two strikers and a turner would effect greater speed than is possible at present without increasing the risk of damaging the crystals.

In the Hazaribagh district the careful nursing of the industry by the Kodarma Mica Mining Association is having beneficial results, and the Association is proving a valuable instrument for protecting the interests of the owners.

MANGANESE.

The output of manganese ore increased by one-half, being 637,391 tons as compared with 423,464 tons in 1912, but it was still 0·73 per cent. below the record year of 1907 when the Russian output fell away by reason of the war with Japan, and there was a greater demand for Indian ores.

From the point of view of the producer the state of the trade was much the same as in 1912, for although the average price per unit was as high as eleven pence yet the abnormally high ocean freights absorbed all the additional profit. During the latter half of the year freights improved, but at the same time the price of ore dropped to ten pence per unit.

GEMS.

The increase of 12·15 per cent. recorded last year has been wiped out by a decrease of 13·78 per cent. in the output of gems during 1913. The figures are 278,706 carats as compared with 323,247 carats in 1912. The whole of the output comes from the Mogok mines in Upper Burma and consists of rubies, sapphires and spinels.

Any change which there was in the market for these gems was for the worse both in demand and prices. The boom in sapphires was not altogether maintained though cut stones of the best quality continued to fetch remarkable prices.

GOLD.

The output increased from 7,269 ounces to 11,019 ounces, all of which comes from the Anantapur district in Madras.

The increase is 51·59 per cent. Except for 244 ounces from the Jibutil mine the production was entirely from the North Anantapur mine, which continues to show high values.

WOLFRAM.

This valuable mineral is used in the manufacture of the specially hard steel used as armour plate in war-ships and in the tungsten filament lamp. The district of Tavoy in Lower Burma is now the largest producer of wolfram in the world. The possession of these deposits is a valuable asset to the Empire.

The output was 27,520 cwts. This represents only the small increase of 8·34 per cent. on the figures for the previous year, but there is every indication that there will be a more substantial increase in future years.

The direct revenue from wolfram collected by Government amounted to 1¼ lakhs, whilst the indirect revenue probably was much greater.

Up till the present time large capitalists have, except in one instance, held aloof from the industry, but the facility with which certain owners have been able to develop their mines from revenue has attracted attention and it appears probable that before long firms of considerable financial standing will exercise options over certain mines.

There has been a considerable increase in underground mining and at one mine not less than 20,000 feet of driving has been done.

CHROMITE.

There was renewed activity in chromite mining in the Zhob district in Baluchistan where of recent years the production has steadily dwindled. The output was 3,414 tons. The production in 1912 was only 6 tons and this came from the Quetta-Pishin district.

The mineral is chiefly used in the manufacture of specially hard steel, and it commands a high price.

OTHER MINERALS.

There were increases in iron, slate, tin, clay, fullers' earth, steatite and salt, and decreases in copper ore, limestone, galena, corundum, magnesite and samarskite.

Section III.—Accidents.

During the year 1913, at mines regulated by the Indian Mines Act, 1901, there were 136 fatal accidents, being an increase of 3 as compared with the number in 1912, and an increase of 6 as compared with the average number of the last five years.

These accidents involved the loss of 211 lives. This is an increase of 26 upon the number of deaths in 1912. In the report for 1912 it was stated that one accident caused 23 deaths. The year under report was a peculiarly unfortunate one as regards the large loss of life occasioned by certain accidents. Twenty-seven lives were lost on the occasion of an explosion, twenty-seven by three irruptions of water and seven by a fall of roof.

Of these 136 accidents, I regard (*a*) 60 as being due to misadventure, (*b*) 33 to the fault of the deceased, (*c*) 7 to the fault of fellow workmen, (*d*) 8 to the fault of subordinate officials, and (*e*) 28 to the fault of the management.

Very many of these accidents might have been prevented by the exercise of ordinary care and forethought on the part of both officials and men, and I am satisfied that only by closer supervision and stricter discipline can their number be diminished. Such accidents result from persons passing through fences into old workings to get easily worked coal, from persons sitting in

dangerous places or under roof coal at which they have just been working, from persons being struck down by falling roof and sides as they travel to and from their working places, and from disobedience to an official's orders in trivial matters.

It is by no means an uncommon occurrence for persons to be killed in a mine whose presence there was entirely unknown to the officials. In the case of mines with entrances on the outcrop a simple way of preventing persons from unauthorized entrance would be to provide a barred gate completely filling the opening. The gate would be furnished with a lock of which the key would be in the charge of a responsible official. An arrangement could easily be made by which the lock could be turned from within, but only by the use of the key from the outside. Such a provision would undoubtedly reduce the number of accidents and improve control over the labour force.

A point to which attention may be directed is the desirability of raising the standard of qualifications demanded from the subordinate officials, particularly sirdars. Men drawn from the ranks of the coal miners themselves, often with relatives working under them, in some cases paid partly by commission on output, and frequently receiving their salaries from contractors for coal getting, cannot be expected to command the respect and to wield the authority which their position demands. To obtain the right class of men a general increase in the rates of pay would be necessary, but I am of the opinion that the result would justify the expenditure. Educational facilities for subordinate officials have been provided in the Jharia and Raniganj coalfields since 1906, and funds have now been sanctioned for the extension of these facilities to persons who speak only the vernaculars.

The death rate per thousand persons employed was 1·16, while that of the preceding four years was 1·17. At coal mines only these figures were 1·39 and 1·32, and at mines other than coal 0·54 and 0·74. At coal mines in England during the ten years ending with and including 1912, the death rate per thousand persons employed varied from 1·17 (lowest) to 1·69 (highest).

The death rate per millions of tons raised at coal mines only was 11·95, while that of the preceding four years was 11·97. At coal mines in England during the ten years ending with and including 1912 the death-rate per million tons raised varied from 4·29 (lowest) to 6·37 (highest).

Of the persons killed 169 were males, 41 females and 1 child.

The deaths occurring in each class of mine worked were as follows:—

One hundred and eighty-five in coal mines, 7 in manganese mines, 9 in gold mines, 6 in wolfram mines, 1 in copper mines, 1 in clay mines, 1 in salt mines, and 1 in limestone mines.

Twenty-nine persons lost their lives by explosions of fire-damp; 78 by falls of roof and sides; 29 in shafts; 1 by suffocation by gases; 2 by explosives; 30 by irruptions of water; 16 by haulage; 14 by other accidents underground, and 12 on the surface.

I regret to record that there has been a decrease of only one in the number of deaths from falls of roof and sides. The increase in the number of deaths from explosions of fire-damp is due to the lamentable disaster at Chowrasi coal mine by which 27 persons lost their lives.

A list of these accidents appears in Appendix II, Table I. In addition to them there were 36 others, causing the death of 38 persons. These also appear in Appendix II, Table I, but are listed separately, a reason being given in each case for their exclusion from the statistical tables.

In the Bengal and Bihar coal mines, where most of the statistical accidents occur, there were 162 deaths compared with 137 in 1912; but it may be remarked that the year has witnessed four disastrous occurrences in these provinces, caused by floods and an explosion, which are responsible for 54 deaths. If the large accidents of both years are eliminated the number of deaths is 108 compared with 114 in 1912.

In the last report an accident due to an irruption of flood water from the surface, causing 23 deaths, was mentioned. Previous to 1912 accidents from

this cause had been exceedingly rare. Since 1896 only one accident causing two deaths had occurred, and it was hoped that such an accident as the one above referred to would not occur again. In the year under report, however, no less than four accidents occurred from this cause involving the loss of 13, 2, 7 and 7 lives, respectively. In the first three cases, nalas or rivers overflowed into the mines, and on the occasion of the last of these three accidents many other mines were flooded and completely filled, fortunately without loss of life. It has taken many months for some of them to be dewatered. In the fourth case a rise gallery had been driven much too near the bed of a small nala, and on the same night as that just alluded to the water of this nala, which was in high flood, burst into the gallery. As detailed further on, it is possible that the escape of the persons drowned was cut off by gradually rising water before the nala broke in, but it is almost certain that they were actually drowned by its breaking in.

I trust that these occurrences will make managers realise the great danger which may arise where inclines or shafts are sunk near nalas or rivers or in low-lying ground, and how important it is that they should be on the alert when heavy rain brings about a large flood. The practice of driving galleries too near the surface when such surface forms a portion of or is near to a nala or low-lying ground is a dangerous one, and in all suspected cases a careful check survey and levelling should be made so that the exact position may be ascertained, and if found necessary protective works should be undertaken.

A reference may here be made to the special report following on the withdrawal of workmen through sudden danger required to be made by rule 5 of the rules for coal mines established under section 20 of the Indian Mines Act, 1901, and published in Government of India Notification No. 864-68-20, dated the 10th March 1904. Cases have come to notice in which colliery managers have considered that the law has been complied with when such occurrences are recorded in the book in which ordinary daily inspections under rule 4 are recorded. This is not the case. A separate book, conveniently called the "Special Danger Book," should be kept for the record of cases in which withdrawals of workpeople have been necessitated.

A feature of the year's working is the large number of accidents that can be traced, directly or indirectly, to goafing operations. There were 24 such accidents out of a total of 60 caused by falls of roof and sides. Goafing is rapidly on the increase and will in time be practised at every mine, but it should be remembered that the supervision which is adequate for gallery driving will not suffice for goafing. Generally speaking the work has not been systematized and until it is accidents are bound to occur. Insistence on props being set before goafing commences, and at a definite distance apart while it is in progress, and on the removal of all overhanging side and the support of fractured corners of pillars, will do much to eliminate many of the dangers that are inherent in this class of work.

I would also venture to draw the attention of managers to the fact that 7 accidents occurred in shafts that would unquestionably have been prevented by the use of proper fence gates on the cages. Their use has become compulsory in Great Britain, and I trust managers in India will be more liberal in their views on this question and provide gates on all cages.

During the year steps were initiated for the establishment of special rules for coal mines under section 21 of the Act. The statutory procedure is cumbersome and delays are unavoidable. In the Jharia coal-field, owing to Hindi having recently been permitted as a vernacular language in the courts, the process of establishing the rules is delayed pending the receipt of a satisfactory Hindi translation.

EXPLOSIONS OF FIRE-DAMP.

No. 1.—Saltore Coal Company, Limited's Saltore coal mine.

This explosion occurred on a main level gallery between two shafts, which have recently been connected to each other by means of this gallery, which forms the only connection. At a point upon it roof stone, 2′ 6″ in thickness,

was being taken down to make the gallery 8 feet high, and the sides were being dressed near the same place to give a width of 9′ 3″.

On the day of the accident the manager was underground until 1 P.M., when he returned to the surface. At the same time the regular shot firer left the pit for the day, having had leave to do so.

It appears that about 5 P.M., the man who had the contract to increase the height and width of the gallery obtained the shotfiring battery from the engine house on the surface, where it had been placed temporarily, and fired first two shots in the roof and then three shots in the sides, one on one side and two on the other. While firing these shots the contractor and two miners were standing at a point 163 feet from the roof shots. The side shots were 11 feet nearer. The contractor was round the corner of a rise gallery, but the miners were on the level, between a tub and a brattice sheet.

Nothing untoward occurred when the roof shots were fired, but on the firing of the side shots there was a rush of flame and the two miners were burnt. They both walked out of the pit. One recovered but the other died two days afterwards. The contractor was uninjured. He was not authorised to fire shots and was fined and dismissed.

It was ascertained that, owing to a defect in the winding engine, the winding of water at the downcast shaft was stopped in the middle of the day for one-and-a-half hours. The rising of the water must have reduced the sectional area of the air passage near the bottom of the shaft, thus affecting the ventilation. The result was that gas accumulated at the place where the shot was fired. The roof shots probably gave off no flame, but one at least of the side shots must have done so, and the gas was ignited by it.

The colliery was worked exclusively with safety lamps. Since this accident the owners have drawn up a strict code of byelaws to regulate shotfiring.

No. 2.—Indian Collieries Syndicate Limited's Jamadoba coal mine.

This explosion occurred in a main level gallery which was being driven to connect with another main gallery which was being driven towards it. There were only a few feet of intervening coal between the two galleries.

Work had been proceeding during the week previous but had finished on Friday the 25th July. No work had been done on Saturday, Sunday or Monday. On Tuesday two main gallery men, one of whom was deceased, came to the mine and went down without apparently first seeing the sirdar or waiting to see him. They went down to the mouth of the narrow gallery, at the mouth of which there was a large heap of coal brought out from the face. Kaila Meah sat down, and deceased, with a candle in his hand, went into the gallery. According to Kaila Meah the deceased had only gone in about 15 feet or so when there was a roar and a flash which did not come out as far as he was. He ran in and helped deceased out and up through the barrier to the pump where they met the sirdar. When the manager arrived he found deceased sitting at the top of the incline and had him sent home on a charpoy.

It transpired at the inquiry into this accident that two years previously there had been a slight explosion of gas in this mine. Some little time afterwards, when the regular manager was on leave, orders were given by the agent that an inspection with a safety lamp must be made after the week end stoppage. The practice was discontinued on the return of the manager from leave. About three weeks before this accident one of the main heading drivers reported that he thought he had smelt gas at the place where the accident occurred. The manager made a test both with a safety lamp and with an open light and reported to the agent that he had found no gas. There probably had been gas there, but it had been diffused before the arrival of the manager.

It was, I consider, an error of judgment on the part of the manager not to have resumed the test for gas with a safety lamp after the week end stoppage, on hearing from the main gallery driver that he thought he had smelt gas.

The sirdar in charge said he knew there was a rule that workpeople should not go into the mine, after the week end stoppage, before he had made his

inspection, but that the main gallery drivers were accustomed to disregard the rule. As he again allowed the rule to be broken after the inquiry into this accident, he has been dismissed.

No. 3.—The Equitable Coal Company, Limited's Chowrasi coal mine.

Ignitions and explosions of gas have occurred in India from time to time, but this is the first occasion on which this Department has had to record an outbreak of fire which resulted in an explosion on a very large scale in which coal dust played the prominent part it frequently does in such catastrophes and accounted for the large area traversed by the explosion and for the violence and force accompanying it.

The mine, as will be seen by reference to plan A, consists of six inclines and six airshafts all of which are connected. Measuring along the strike, the distance from the extreme east of the workings to the extreme west is 6,500 feet. Measuring from the outcrop down the dip the face of the workings is 2,400 feet from the mouth of the inclines. There is therefore an area of 15,600,000 square feet of workings, consisting of pillars and galleries, the latter aggregating 62½ miles in length.

The seam is the Dishargarh seam. It is here nine feet thick and dips towards the south at the rate of 1 in 3½.

At about 5-20 P.M. on the afternoon of the day on which the accident occurred, when about 420 persons were at work in the mine, smoke was seen issuing from the mouth of No. 3 incline, and at the same time some of the workpeople rushed out to the surface. The manager, who happened to be at the top of the incline at the time, descended to a point about 10 feet below the entrance and found a large quantity of smoke coming up. Orders were given to clear the mine by way of the other inclines and to stop the ventilating fan.

At about 7-25 P.M. after a brattice had been put up at No. 2 incline and while an attempt was being made to put a stopping in the mouth of No. 1 incline, which was downcasting, a violent explosion took place, the tops of Nos. 1, 2, 3, 4 and 5 inclines were wrecked, the brick chimneys built over Nos. 1, 2 and 4 airshafts were blown down and the following casualties occurred on the surface. One mistry at No. 1 incline was injured so seriously that he died next morning, and at No. 4 incline one sirdar and one coolie were killed outright. Five minutes afterwards a second explosion occurred, another at 7·42 and four others at 8 P.M., 8-20 P.M., 9 P.M., and 9-5 P.M. The second explosion was a violent one, but the others decreased in intensity, and the last two were very slight. The first two were heard distinctly at Raniganj, 19 miles away.

Large masses of brickwork were hurled several feet and No. 1 engine house which is 250 feet from the incline looked as if it had been bombarded. The interior of the engine house was covered with pieces of brickwork, some of which had been hurled against the back wall. Every pane of glass in the fan engine house at No. 2 airshaft was shattered.

Coked coal dust was noticed near the top of No. 4 airshaft.

In a few hours flames 80 feet high were coming out of some of the inclines and shafts. Nos. 1 and 6 inclines and their airshafts were downcasting strongly, but smoke and flame continued to pour out of No. 3 incline and airshaft and No. 4 airshaft.

The work of closing the mine down by sealing up these six inclines and shafts took several days.

In addition to the three men who were killed on the surface by the first explosion, it was ascertained during the next few days, as the result of inquiries made by the management and the police, that twenty-four others were missing. Of these persons nineteen worked in galleries near the face of No. 3 incline and five on the haulage road.

They were probably suffocated by the increasing smoke on the main No. 3 incline as they attempted to escape that way. Owing to the unusual steepness

of the incline, it would very soon become a flue, in which smoke would ascend at a rapid rate.

This accident was made the subject of an inquiry under section 18 of the Indian Mines Act. One man, a pumpman, named Sahadat Sheik, who was one of those who escaped, was an eye-witness of the initial conflagration and was therefore able to give extremely valuable evidence. He was employed at a pump near the face of the companion dip of No. 3 incline. He stated that the surveyor babu and a sirdar came to extend the chalk centre line of No. 3 incline main dip gallery, and that when the surveyor raised his candle near the roof there was a flame, which, in spite of the efforts of the two men to put it out, increased and moved about, until a brattice sheet, erected longitudinally in the gallery caught fire. He then ran away.

The face of the dip gallery, and the position of the pump and brattice sheet are shown on plan B.

There is no doubt that the surveyor lit an accumulation of gas in this dip gallery. It is probable that the men working there that morning struck into a feeder of gas. The gallery was visited at 8 A.M. by the assistant, who found no gas. The feeder therefore must have been struck into after his visit. One of the men who were working there from 9 A.M. till midday stated that he saw no gas. This is possible. It might not be noticed at the time as the movement of the miners passing to and fro would dissipate it, but after work had ceased this would not be the case, and by the time the surveyor reached the place it was probably an accumulation of considerable size.

The subsequent explosion was probably caused by the burning brattice cloth and timbers heating up the small coal, which is usually lying on the floors of galleries, and eventually the solid pillars of coal, to such an extent that volatile gases were liberated from the coal in much the same way as these gases are given off in a coke oven. The Dishargarh seam is very rich in volatile gases which are easily liberated from the coal when the latter is heated. These gases when mixed with about ten times their own volume of air and ignited would explode with great violence and raise into suspension the fine coal dust lying about the sides and roof of the galleries of the mine. This coal dust would in turn explode and raise more dust which would also explode and thus carry the explosion throughout the whole of the workings.

It cannot be stated definitely that the stopping of the fan and the sealing off of Nos. 1 and 2 inclines had any influence on the occurrence of the explosions, but it is a significant fact that when, after the explosions, the fire had gained such a hold on the workings as to induce enormous quantities of air to pass down Nos. 1 and 6 inclines and airshafts—110,000 cubic feet of air per minute were measured at No. 6 incline alone—it burned for three or four days without any further explosion occurring. It would probably have been better to have slowed down the fan instead of stopping it altogether.

The sealing off was eventually effected by filling in those inclines and shafts which were smoking and flaming, leaving the intakes untouched. This went on until only No. 1 shaft (upcasting) and No. 6 incline (downcasting) were left open. The work of filling up No. 1 shaft was commenced first, and as soon as the flame and smoke were somewhat checked, No. 6 incline was gradually closed with corrugated sheets.

The Dishargarh seam gives off gas in some mines, and the neighbouring mine to Chowrasi was and is worked exclusively with safety lamps. Chowrasi was worked as an open light mine, except that in certain forward drivings, including the face of No. 3 incline, safety lamps were used as a precaution. Altogether there were about 35 safety lamps and about 400 naked lights in general use. In rule 15 of the rules for coal mines it is laid down that no lamps but safety lamps shall be used "in any place in a mine in which there is or is likely to be any such quantity of inflammable gas as to render the use of naked lights dangerous." To the rule the following important proviso is attached :—"And when it is necessary to work the coal in any part of a ventilating district with safety-lamps, it shall not be allowable to work the coal with naked lights in another part of the same ventilating district situated between the place where such lamps are being used and the return airway."

The management of Chowrasi held that such gas as had been discovered was not of such quantity as to compel them to put in safety lamps generally in accordance with this rule. Inquiry has shown that they were justified in their views. Gas had been seen from time to time, but in very small quantities. On two occasions persons had been very slightly singed, and it was stated in evidence that gas was ignited by some person unknown in the No. 3 incline main dip about nine months previous to this accident. The manager on being apprised of the fact went there and found it burning. It is often possible to light a minute feeder of gas in this way, and it will burn innocuously until put out.

No gas had ever been found by an Inspector, but in 1911 the Inspector of Mines for the circle drew attention to the fact that gas was reported from time to time in the daily report book and suggested to the management that the ventilation should be improved. The result was that a fan was ordered from England and had been set to work a few days before the explosion occurred.

Having decided to use lamps as a precautionary measure in the forward drivings the manager should, in my opinion, have taken more care to see that anyone whose duties took him into them should be allowed no light other than a locked safety lamp. Both the surveyor and a boy accompanying him were in the habit of going about with naked lights. The fact that a small quantity of gas had been lit up in No. 3 incline main dip in the previous January, and that an inflammable brattice sheet was hung there called out all the more for caution.

FALLS OF ROOF AND SIDES.

No. 59.—R. M. Pal and Brothers' Kesalpur coal mine.

Disobedience frequently results in accidents. In this case five women entered a gallery that was under repair to load up dust coal. The repairer warned them that the gallery was not working and four of them left at once, but the fifth continued to work. Suddenly, and without warning, a large slab of coal measuring $10' \times 6\frac{1}{2}' \times 2\frac{1}{2}'$ thick at one end tapering to a feather edge at the other, fell from the side and killed her on the spot. The fall disclosed a slip of pronounced character. It is impossible to state whether its presence could have been detected by inspection, but there is no doubt that an examination by sounding would readily have detected its condition, and this should have been done by the sirdar when he made an inspection two hours before. For his negligence he was dismissed.

The sirdar removed the fence to allow the repairer to work, a proceeding that was unnecessary. It is always permissible for repairing work to be conducted inside a fence and of this fact more advantage might be taken by mine officials.

IN SHAFTS.

No. 85.—Eastern Coal Company, Limited's Bhowra coal mine.

This accident, which is illustrated by plan C, and the circumstances attending it present a powerful reason for the complete securing of those parts of shafts that are in coal.

The shaft in which the mishap occurred was sunk in 1906 to No. 14 seam which here attains a thickness of 38 feet. The shaft levels were driven 9′ 6″ high at a point in the seam 15 feet above the floor, which left $28\frac{1}{2}$ feet of coal exposed in the shaft.

This inset was in constant use for raising coal up to April 1913 when it became necessary to sink the shaft down to No. 13 seam. Coal raising was stopped and the shaft dismantled. The former pit bottom then became nothing but a middle landing. Sinking was started and continued without mishap to a further depth of 113 feet where No. 12 seam was reached.

Early in the morning of the 15th November 1913 the usual examination of the shaft sides was carried out by a sirdar who declared them safe, and then ordered five water bailers to descend the shaft to prepare the sump for the sinkers. After a few buckets of water had been sent to the surface a large

block of coal fell to the shaft bottom, killing three of the bailers outright and slightly injuring the other two. The evidence of the survivors shows that it occurred without the slightest warning. Subsequent examination disclosed the fact that the block of coal, which measured $8' \times 7' \times 6\frac{1}{2}'$, had formed the roof of the inset at the middle landing in No. 14 seam, and that it had carried away its supports. These consisted of a steel girder, $6'' \times 5'' \times 18'\ 4''$ long, which had been fixed under the roof next the shaft, and also 4 or 5 bars of round timber, 6″ to 8″ diameter, which had been let into the side at one end and supported on props at the other. The girder had been let into the solid coal at one end and supported on a projecting ledge of coal, 12″ thick, at the other. This ledge had been broken through and the girder deflected 3′ 3″ by the weight of the block of coal, and the bars had been broken.

Two slips were revealed by the fall, and these, together with a smooth parting, were the primary causes of the accident. One slip ran into the side of the landing and could not possibly have been detected by examination and the other ran across it and may have been hidden by timber or not discernible at all. The existence of these slips was not known. Owing to the great thickness of the fallen coal it was not possible by any method of testing or of examination to ascertain its condition.

As there were no unusual disturbing features—the last shots in the sump had been fired 19 hours before — it would seem that weathering along the line of the slips, possibly hastened by the escape of steam from a pump situated close by, was the cause of the fall.

The support was obviously insufficient and, even had it been greater, applied as it was, collapse would most probably have occurred, as the hade of the slips caused the movement to be slightly lateral, and there was nothing on the shaft side to resist this movement.

The only practical support that could have been applied to resist this movement was masonry, and this should have been extended throughout the whole thickness of the seam exposed in the shaft. There are many shafts where the bricking up of each seam is carried out as soon as it is reached in the sinking, whether the coal is friable or not. This is an excellent practice, and I would recommend to colliery authorities the desirability of protecting all seams of coal that are exposed by sinking.

No. 88.—Lodna Colliery Company, Limited's Sripur coal mine.

Special interest attaches to this accident in view of the large increase in the number of shafts in use in the coalfields. A piece of stone, measuring 24″ × 16″ × 5″, fell to the bottom of No. 2 shaft, 910 feet deep, and killed a sinker there. This was the fourth accident of its kind at this mine during the previous seven months. The first one dislocated a man's wrist at No. 1 shaft, the second broke a sinker's leg in No. 2 shaft and the third killed a sinker, also in No. 2 shaft.

No trouble appears to have been experienced with stones falling till a depth of 640 feet was reached when a somewhat weak piece of ground, composed of shaley sandstone, 40 to 50 feet thick, was encountered. From this ground frequent falls occurred. Below this the ground was strong down to a depth of 880 feet, where almost vertical joints were met and a considerable amount of dressing by hand had to be done. Between these two pieces of bad ground, at a depth of 792 feet, the Koithee seam is met and there is a piece of false bedded shaley sandstone just above it.

On six or seven occasions men had been withdrawn because of stone falling, and only on one occasion was it possible to detect the place from which the stone fell.

The management has been much concerned with this unsatisfactory state of affairs and has done all in its power to secure immunity by dressing the sides and frequent inspections, but it is clear that more adequate precautions are necessary. I have since been informed that before continuing the sinking the weak ground will be secured by masonry.

IRRUPTION OF WATER OR FALLING INTO WATER.

No. 92.—Banerji Santan's Jotejanaki coal mine.

This unfortunate accident, by which thirteen women who were loading dust coal lost their lives, occurred owing to the water of a nala, near the mine, rising above the level of the inclines, completely filling the mine and drowning the deceased. There were three of these inclines and a shaft, but the top of the shaft was above the level of the flood.

The accident was made the subject of an inquiry under section 18 of the Indian Mines Act, and it was ascertained from reliable witnesses that although at sunset this nala was nearly dry and although at 8 A.M. next morning the flood was rapidly receding, yet, at 1 A.M. the water had reached a height unprecedented in the neighbourhood. A few miles away two railway bridges were washed away and in the case of one of them a passenger train was wrecked. At a bungalow near the mine, which was built in 1906, there were at 3-30 A.M. 2 feet of water in the rooms. It is known that the site had not been flooded for twenty years, and from inquiry apparently not for over forty years.

About four years previous to the accident a tramway bridge was built over the nala, a little downstream from the mine, and there is no doubt that owing to this bridge and the embankments approaching it the water was pounded back and prevented from flowing away freely. Moreover a little way upstream at another mine, on the opposite bank of the river, there is a winding engine, the foundations of which are close to the nala, and in flood time, owing to a bend in the nala, the water would be deflected from the foundations towards the inclines.

The management professed absolute ignorance of the fact that the thirteen women were underground that night. The staff consisted of an agent, who resided in Calcutta, and a manager, who holds a second class certificate of service, while the subordinate officials for that night were one mining overman (Bengali Sarkar) and one sirdar (Moti Bauri). A practice prevails in the neighbourhood of Raniganj of mining officials, winding engineman and banksmen working twenty-four hour shifts, that is to say, they work twenty-four hours and rest twenty-four hours. That these hours should be worked by ordinary miners is a matter to be deprecated on the ground of safety, and many managers would like to see the practice discontinued, if the obligation to do so were universal, but in the case of men who are responsible for the lives of others there can be no question as to the undesirability of them working for twenty-four hours. Fortunately the practice is confined to this particular locality.

Bengali Sarkar, the overman, stated that on the night of the accident he went home after having worked all day and having gone underground with the sirdar at 9 P.M., when they found no one in the mine. He went home because he knew that he would have to work on the following day, owing to the fact that the other overman was away on leave.

Moti Bauri, the sirdar, stated that at about 8 P.M., he told the manager that all the day miners had left work. At 9 P.M. he went round the mine with the overman and found no one at work. He then went to sleep at the top of the shaft.

Seeing that persons working on the night shift almost invariably go to work about sunset, the above timings must be regarded with grave suspicion. As at most small mines, night work is not carried on every night, and in this case it is extremely improbable that any inspection of the mine was made after work ceased for the day, which would probably be late in the afternoon.

Heavy rain did not commence till 10 P.M., and the manager was justified in retiring for the night, thinking that there was no danger. There was no reason why the overman should not have gone away for the night, as he had to work next day, and as he left the sirdar in charge. The latter being in charge, should certainly have been more vigilant. There is no doubt that the danger was not realised by anyone on the colliery and that every one concerned went to sleep, to wake only when the water was passing into the mine.

With the object of rescuing possible survivors in the rise workings, more promptitude might have been shown in pumping out the water, but, as a matter of fact, from the position of the bodies when recovered and the *post-mortem* evidence it is quite certain that no lives could have been saved, however quickly the water had been pumped out.

No. 94.—The Indian Collieries Syndicate, Limited's Jamadoba coal mine.

This accident, which is illustrated by plan D, was due to the flooding of the No. 2 shaft upper main level (A B on plan), in which seven miners, who were working there on the 7th of August, were cut off from escape during the night of the 7-8th and drowned.

On the morning of the 7th, there was very heavy rain, and no ordinary coal getting or coal raising was carried on. The manager went underground and saw the deceased miners near the mouth of the level, which they were driving forward. He told them there was no need for them to work that day as they would get no tubs. They nevertheless did go to work. They were paid a rate per lineal foot for driving the level and, as the next day was measuring day, they wanted to cut as much as possible.

Throughout the day, owing to water coming down the shafts and inclines, and also probably to percolation from the surface through goaves and workings, driven so near the surface as to leave very little cover, the water at the bottom of No. 2 shaft was rising.

The manager came to the surface at midday and during the afternoon he again went underground in order to get some machinery moved above water level, to prevent it being drowned out. This operation took him, and the gang of men assisting him, till 10 P.M., when, just before leaving the mine, he noticed the level of the water at the pump near the bottom of No. 2 shaft. From levellings which were made, after the water was pumped out, it has been found that when the water was at the level noticed by the manager it was within 2′ 6″ of the roof at the mouth (A on plan) of the level in which the seven deceased men were working. Their retreat therefore at that hour was on the point of being cut off, and must have been cut off shortly afterwards.

It afterwards transpired that another gang had been working in the companion gallery (C D on plan), which is at a lower level. From the evidence of these men, who left the mine early in the evening, it appears that they came up to the upper level—the mouth of their own level was probably cut off by the rising water — and asked the deceased if they were coming out. The latter replied that they still wanted to cut a few more feet. The evidence is not clear as to whether the deceased at this stage were cognisant of the height of the water at the mouth of their gallery. At any rate they continued to work on.

The evidence of the other gang goes to show that about 4 P.M., a sirdar, named Pooran Meah, visited these galleries. He was one of the head sirdars, and without any doubt was in charge of these men and responsible for their safety. It was stated that he made no remark to any of them at the time of his inspection.

The following morning it was found that the water from a nala on the surface at the extreme rise of the workings 2,600 feet from No. 2 shaft had broken into a gallery which had been driven up within a few feet of the bed of the nala and had filled the mine to a point 1,048 feet from the shaft, thus completely flooding the deceased's gallery. It is therefore a question of whether they could have been saved if the nala had not broken in. It is possible that they could have been. They were missed early on the morning of the 8th and it is just possible that the water would not by then have risen to the face of the gallery, and that by the introduction of auxiliary pumps they could have been rescued. Once the nala broke in the case was hopeless. It was weeks before the water could be pumped out sufficiently for the bodies to be recovered.

The accident was made the subject of an inquiry, which was ordered by the Local Government, under Section 18 of the Indian Mines Act.

In my opinion the sirdar Pooran Meah was to blame in not getting out these men in the afternoon.

As detailed in section IV, the manager and the sirdar were prosecuted for neglect to withdraw the workmen from a dangerous part of the mine.

Since the accident the workings into which the water of the flooded nala flowed have been completely shut off from the dip workings by masonry dams.

No. 95.—Bengal Bhatdih Coal Company's Bhatdih coal mine.

This accident which is illustrated by plan E and section F was due to the flooding of the river Damuda which, at sometime during the night of the 7th-8th of August, rose to such a height that the water reached the level of the colliery inclines, 19 in number, which were situated on the bank of the river at an average elevation of 25 feet above its bed. Continuing to rise it eventually reached a height of 14 feet above the level of the lowest incline, and the water poured in to the mine through some of the inclines and completely filled it. The only other exits from the mine were the two shafts, Nos. 1 and 2, situated to the dip. These shafts, which were 270 feet deep, were filled to a height of 180 feet from the bottom.

The flood was an extraordinary one. All rivers in the neighbourhood were in high flood, many mines in both the Jharia and Raniganj coal-fields were drowned out at the same time, and further downstream, near Burdwan, an embankment, which I understand has stood for forty years, was breached and a very large tract of country was flooded. Between the 4th and 7th of August, twenty-five inches of rain were registered at a rain gauge kept at a mine about two miles from Bhatdih.

There had been previous high floods, and the mouths of seven of the inclines had been protected by stone masonry embankments, ranging from 5 feet to 9 feet high, whilst in addition at Nos. 21, 22 and 23 inclines the openings had been dammed off by means of brick walls 5 feet thick and by stowing with rubbish. Some of the other inclines had also been stowed up more or less completely, but seven were open except for masonry embankments protecting three of them.

On the afternoon of the 7th of August the river was rising, and when night came on the manager sent two men to watch the level of the water. Later on these men reported to the manager that the water was at such a height as to allow it to rise another eleven feet before it could enter the mine. The manager then went to bed, having sent the two men back to the river with orders to watch and again report if the water rose another $2\frac{1}{2}$ feet. Some time in the night the men working in the mine found that the water was rushing into it. Some escaped at once and the sirdar went up to fetch the manager who at once descended No. 1 shaft. The manager sent the sirdar to get out all the men on the west side, while he attempted to go east, but could make little headway owing to the current. The sirdar succeeded in getting to the four men who were working on the west side and bringing them back to the shaft. Meanwhile the manager had lost the light in his safety lamp. He ascended the shaft with the sirdar and the four rescued men, in order to procure another light, but, by the time he had got to the bottom of the pit again, the water had completely filled the shaft levels.

Besides the sirdar there were 18 persons in the mine that night. Of these six ascended the shaft at the first alarm, and four, working on the west side, were rescued by the sirdar, as stated. The remaining eight were working on the east side from whence some others had escaped. By the time, however, that these reached the gallery leading down to No. 2 shaft they found the rush of water so great that they could not cross the gallery. One attempted and was promptly carried off his feet and swept down into the shaft, where he caught hold of a guide rope, by which he eventually climbed to the surface. His escape was marvellous. The other seven were probably drowned in a very short time. Their bodies were recovered on the 29th September.

The accident was made the subject of an inquiry under section 18 of the

Indian Mines Act. It is practically certain that the men sent to watch the river went to sleep, probably in one of the inclines. It is not likely that the underground sirdar and those at the shaft bottom were any more on the alert. As detailed in section IV of this report, prosecutions were instituted against the manager and against the sirdar sent to watch the river for neglect to withdraw the workmen from a dangerous part of the mine.

To provide against a similar accident in the future no persons will be permitted to work underground in the inclines at night during the monsoon season, and if at any time a flood in the river rises to a certain fixed point, well below the mouths of the inclines, all persons will be withdrawn from the workings. Strong masonry dams have already been erected in the two openings through the coal barrier between the workings from the inclines and those from the shafts.

HAULAGE.

No. 102.—Titulmuri Collieries, Limited's Titulmuri coal mine.

A train of empty tubs was being lowered into the mine. Previous to lowering, while the train was still on the level, the engine driver tightened the rope to see if all the couplings were in order. He then slackened the rope and the tubs were pushed by the tubmen over the brow, the catch points having previously been set to the incline. Owing to the rope being very slack there was a jerk when the rope took the weight and a coupling broke, allowing seven tubs to run wild down the incline, running over a man, who was asleep underground, and killing him. An examination of the broken coupling showed that the fracture had occurred at the weld, and that the weld was a very imperfect one.

The accident would not have occurred if the catch points had been set to the catch siding and not to the incline. It is no use providing catch points or switches unless the workmen who have to actuate them are taught that until the whole train is on the slope and the rope and couplings have taken the weight, the catch points or switches must not be set to allow the train to travel into the incline.

No. 103.—Lakorka Coal Company, Limited's Lakorka coal mine.

A set of twelve empty tubs was being pushed over the brow of an incline on to the slope, in order to be let down into the mine, when, owing to a coupling not having been attached, seven tubs ran wild, killing a man, who was evidently asleep, underground. In this case the points of the catch siding were not sufficiently far down the slope to allow a full set of tubs to be on the slope above them. In consequence the catch points had to be set to the incline before it could be ascertained that the rope and couplings were in order or not. Such points should be a little further down the slope from the brow than the length of a full set of tubs.

Section IV.—Prosecutions and additions to the Act.

PROSECUTIONS.

Judgment was given in the following prosecutions during the year.

The following cases were instituted for breaches of rules made under section 20 of the Indian Mines Act by Notification No. 864-68—20, dated 10th March 1904.

A prosecution was initiated under section 22(*1*) (*e*) and section 22(*3*) (*e*) read with rule 24 against the agent and manager of the Bhalgora Coal Company, Limited's Simlabahal colliery for failing to secure the sides of a sinking shaft. The case arose out of an accident, No. 82 on the list, by which one man was killed and another was injured by a fall of stone. An inspection of the shaft by the Inspector holding the inquiry into the accident revealed the existence of an unsound piece of side which was not secured. The manager pleaded not guilty and said that he had taken all reasonable precautions by appointing a

sirdar to inspect the shaft daily, and that this sirdar had not reported any defect to him. The Court held that there was not sufficient evidence to prove that the stone which caused the accident fell from the bad ground, and hence that the evidence was insufficient to convict under section 22(*1*) (*e*), but held that the sirdar appointed was incompetent and hence that the manager was liable and convicted him under section 22(*3*) (*e*) and fined him Rs. 50, or in default three weeks' simple imprisonment. The case against the agent was withdrawn.

The manager of S. B. Chatterji's Basumata colliery was prosecuted under section 22(*3*) (*e*) read with rule 1 for working the mine without a second outlet more than two years after the opening of the mine. Work other than that required for making a second outlet had been done. Accused was found guilty and fined Rs. 100, or one month's simple imprisonment.

The owners (3) and manager of the West Ghusik Coal Company's West Ghusik colliery were prosecuted under section 22(*1*) (*e*) read with rule 2(*e*) and section 22(*3*) (*e*) read with rules 2(*b*) and 19. The case arose out of a fatal accident on October 26th, 1912, by which three people were thrown out of a bucket in a winding shaft and killed. There were no guides in the shaft as required by rule 2(*e*). Further offences against rule 2(*b*), there being no indicator on the winding engine, and rule 19, the top of the shaft not being adequately fenced, were disclosed on October 28th, the date on which the inquiry into the accident was made. Accused were convicted under section 22(*1*) (*e*) and were fined Rs. 25 each, or in default three weeks' rigorous imprisonment.

The owner of K. D. Singh and Company's Kalipahari colliery was prosecuted under section 22(*3*)(*e*) read with rules 2(*b*) 2(*e*) and 19 for failing to provide an indicator to the winding engine [rule 2(*b*), guides in the shaft (rule 2(*e*)) or to adequately fence the top of the shaft (rule 19)]. Accused had been previously warned more than once. He pleaded guilty and was fined Rs. 10, or in default fifteen days' rigorous imprisonment.

Proceedings were instituted against Kristo Jiban Chakravarty, owner of Mosila colliery under section 22(*2*) (*b*) read with rule 12 and under section 22(*3*) (*e*) read with rule 19 and also with rule 2 of Notification No. 11793— 103, dated December 30th, 1908, for failure to submit plans of his abandoned mine, for not securely fencing the top of his abandoned pit and for not submitting notice of closing to the Chief Inspector of Mines in accordance with the above rules. As, however, accused was reported to be deceased the proceedings were dropped.

The following cases were instituted for breaches of rules made under Section 20 of the Indian Mines Act by Notification No. 11793—103, dated 30th December 1908.

The agent of the Serampur Coal Company, Limited's Serampur colliery was prosecuted under section 22 (2) (*b*) read with rule 1 for failing to submit annual return figures for his colliery for 1912. As it was proved that he did not become agent of the colliery till March 10th he was acquitted.

The owners (3) of the West Birsingpur Coal Company's Birsingpur colliery were prosecuted under section 22 (2) (*b*) read with rule 1 for failing to submit annual return figures for their colliery for 1912, and under section 22 (3) (*e*) read with rule 2 of the same notification for failing to submit notice of the closing of their mine. They were convicted and two of them were fined Rs. 50, or in default one month's simple imprisonment, and the third was fined Rs. 30, or in default three weeks' simple imprisonment.

The owner of Kendwa and Karma mica mines, the owner of Jorasimar and Harrayapaprawa mica mines and the owner of Murlipahari and Samseria mica mines, all situated in the Giridih sub-division of the Hazaribagh district of the province of Bihar and Orissa, were prosecuted under section 22 (2) (*b*) read with rule 1 for failing to submit annual return figures for their mines for 1912. The Court held, however, that as the complaint was not laid till August 28th, and the final date of offence was February 1st, the suit was barred by section 24 of the Indian Mines Act, and all the accused were acquitted.

On a similar count the owner of Ukharia Samtha mica mine in the Hazaribagh district was prosecuted. He pleaded guilty and was fined Rs. 10, or in default two days' simple imprisonment.

On the same count the late owner of the Bamundiha Coal Concern's Chhatapathar colliery was prosecuted. Accused pleaded guilty, but said that he had been unable to submit the return owing to the records not being in his possession, as, following a decree of the Calcutta High Court by which he was dispossessed of the colliery, he was forcibly evicted from the colliery by the present owners, and all the records and books seized. He was fined Rs. 25, or in default one month's rigorous imprisonment.

The owner of Gararia colliery was prosecuted under section 22 (3) (*e*) read with rules 5, 6 and 7 for working within 50 yards of the land acquired for the East Indian Railway without giving previous notice of his intention to do so or submitting plans as required. His attention had been drawn to the point previously in 1909 when he was warned. He was now convicted and fined Rs. 100, or in default two months' simple imprisonment.

The owner and manager of the Ghusik Coal Company's Ghusik colliery were prosecuted on a similar count. They were each fined Rs. 50.

The following cases were instituted for breaches of rules made under Section 20 of the Indian Mines Act by Notification No. 6436—152, dated 2nd September 1911.

Arising out of a fatal accident, No. 35 in the list, at Seth Ramchand's Tikaria limestone mine, in the Murwara tahsil of the Jabalpur district, by which a woman was killed by a fall of side, the inquiry into the accident revealed the violation of rule 3 in that there was no written report of the daily inspection made on the day of the accident and in fact no daily report book was kept. Proceedings were instituted under section 22 (*3*) (*e*) read with rule 3 against the person who was put down in the annual return as manager, but as there was some doubt as to who actually was manager at the time of the accident, owing to frequent changes, the proceedings were dropped. Proceedings, however, were instituted against the owner under section 22 (*3*) (*e*) read with rule 1 for failing to give notice of the change of manager on three separate occasions. Accused pleaded not guilty, but was convicted and fined Rs. 15 on each count, or Rs. 45 in all.

The following case was instituted under the Indian Penal Code.

Arising out of a serious accident, at the Papathi Amman mica mine in the Salem district, a coolie named Vengam was prosecuted under section 336 for committing a rash and negligent act by drilling into a misfired shot hole. He was convicted and sentenced to two months' rigorous imprisonment.

Section V.—General Remarks.

HEALTH AND SANITATION.

During the year 214 deaths from cholera were reported to have taken place in the Jharia coalfield, and 28 deaths in the Raniganj coalfield. No deaths from plague or smallpox are known to have occurred in the same areas.

The Jharia Sanitation Committee held formal meetings on 15th July, 25th September, and 16th December. Informal meetings were held on 17th and 28th April when means of combating an epidemic of cholera were discussed. A meeting of colliery officials took place on 5th May when proposals for dealing with the epidemic were considered. The Honorary Secretary of the Committee reports that the first cases of cholera appear to have occurred in March at an Indian owned colliery at Tetturia. Other cases occurred very shortly afterwards at a large number of collieries on the Sijua side of the coalfield and at certain collieries on the Jharia side. The epidemic had subsided

considerably by the month of April, but in June an alarming outbreak took place at the Standard Coal Company's collieries in Jharia where there was a heavy death-roll. The disease then spread to other collieries in the same neighbourhood. As the virulence of the epidemic waned in September a few cases occurred in the Jharia Bazar. As a preventive measure against plague rat killing operations were resumed in the Jharia Bazar and at a number of collieries at the beginning of the cold season.

During the year rules under section 11 of the Bengal Mining Settlement Act were published. A copy of the rules will be found in Appendix IV, Statement No. 7. Steps are being taken to appoint a Mines Board of Health for the Jharia coalfield.

The Act for the provision of a pure water supply for the Jharia coalfield has been drafted, and it is to be hoped that the construction of the reservoir near Topchanchi will not be long delayed.

Towards the end of the year there was an epidemic of smallpox at Mohpani coal mine in the Central Provinces. Altogether there were 76 cases and 10 deaths. The mine superintendent remarks that the lesson to be learnt from the epidemic is the great importance of systematic re-vaccination of adults.

The total rainfall at Jealgora in the Jharia coalfield was 71·51 inches, or 26·82 inches in excess of that for the previous year. In the Giridih coalfield it was 61·85 inches, and in the Raniganj coalfield 78·39 inches, or more than double the fall recorded in 1912.

AMBULANCE WORK.

I regret to report that owing to the absence of the honorary secretary of the Central Committee on a year's leave the progress made in ambulance work has not been equal to that of former years. Many colliery managers, however, have interested themselves in the instruction of their subordinate staff and much valuable training was effected, but the lectures did not result in examinations being held.

The annual appeal to the colliery companies for subscriptions has met with a generous response, the sum of Rs. 1,005 being received. I have pleasure in appending a list of the subscribers to the fund:—

The Raja of Jharia, Messrs. F. W. Heilgers & Co., H. V. Low & Co., Apcar & Co., Macneill & Co., Martin & Co., Mackinnon, Mackenzie & Co., Shaw, Wallace & Co., Kilburn & Co., Bird & Co., Anderson, Wright & Co., Babu J. R. Agarwalla's Fatehpur colliery, Pandeybera Colliery Co., Bansdeopur Coal Co., Mr. Khora Ramji's Bulliari coal mines and Babu Bhola Nath Chatterji's Haripur colliery.

Now that the general body of managers and assistants has been trained in "first aid" the Central Committee have decided to extend instruction to deputy overmen, sirdars, fitters and peons at recognised centres. On the return of the honorary secretary in November a network of centres covering the Jharia, Raniganj and Giridih coalfields was organised in such a manner as to bring the classes within easy reach of the staff of nearly every colliery. Twenty-one colliery agents and managers promised the use of their doctors as lecturers and also accommodation for the members of the classes. There are 202 students attending the classes and their numbers will be largely augmented in the immediate future.

The first examination of this class of students was held at Jamadoba colliery under the direction of Mr. T. Adamson and Dr. Frank T. Simpson, and the success which attended it has established the fact that the more intelligent of the working classes are capable of acquiring the practical training necessary to stop bleeding, apply splints and bandages, restore the apparently drowned and carry the injured. Out of 27 candidates who sat for the examination 24 obtained junior certificates and large metal badges bearing the device of the St. John Ambulance Association. This result is most encouraging, for it has disclosed the fact that there are competent men in the coalfields who can give the working classes instruction in their own language.

SIBPUR COLLEGE MINING DEPARTMENT.

Mr. E. H. Roberton, the Professor of Mining at Sibpur College, Calcutta, has reported that of the four students studying the second year's course in mining, two were successful in gaining their diplomas at the examination held in March 1913, while of the twelve students who began studying course I, six sat for examination, and five qualified for promotion to course II.

It may be interesting to record that the special student who was mentioned last year as being the only one left of four who joined the college without scholarships, the other three having been compelled to relinquish their studies owing to pecuniary difficulties, is acquitting himself well. He carried off the III year prize for mining in 1913, and has on two occasions gained the McCale prize given for the best notebook compiled during the annual mining camp. It is to be hoped that the abandoned "special scholarships" will be renewed, so as to give an opportunity to those who can take advantage of it, as this student has done, but who have not the pecuniary means to take out a whole-time course of technical education.

The annual mining camp was pitched at Kustore during the months of November and December, and the site was particularly well chosen as many interesting operations were being carried on and there was a great deal of machinery and boiler plant in process of erection in the immediate vicinity. The students took notes of the new power plant added at Khoira, the electric sinking pump at Kendwadih, the underground "longwall" workings and the aerial ropeway at Loyabad, boiler erection at Alkusa, heavy feeders at Kustore, the erection of headgears, boilers and surface machinery at South Bulliari, the installation of reversible ventilating machinery at Bulliari, and the de-watering of Kusunda Nayadee. Surveys were carried out in the Alkusa mine of the Raniganj Coal Association, Ltd.

MINING EDUCATION IN THE BENGAL AND BIHAR COALFIELDS.

One meeting of the Mining Educational Advisory Board was held during the year.

Lecturers for the session 1913-14 were appointed as follows :—

Jharia Centre, Mr. L. A. Jacobs, B.Sc.; Sijua Centre, Mr. B. Starksfield, Charanpur Centre, Mr. H. C. Read, B.Sc.; Dishargarh Centre, Mr. C. E. Ashcroft; Raniganj Centre, Mr. H. C. Read, B.Sc.

A new centre at Raniganj was opened early in the year.

The lecturers for the sessions 1911-12 report that there were 360 names on the registers. This is an increase of 38 per cent. on the numbers for the previous session. The average attendance at each lecture was 20 students.

One of the lecturers stimulated the interest of students by inviting them weekly to his bungalow to do home work. Another lecturer gave lectures on Elementary Mechanics one hour before the time for the Mining lecture. Such zeal is to be commended.

The sessional examinations were held simultaneously at the different centres on 3rd June 1913, the examiners being Professor E. H. Roberton, M.Sc., and Mr. C. J. E. David, B.A. Of the 83 eligible candidates, forty presented themselves for examination, and seventeen (9 Europeans and 8 Indians) succeeded in obtaining the number of marks necessary to qualify for a certificate. At the previous examination 25 presented themselves and 16 were successful. Student G. D. Knyvett obtained the highest marks.

The examiners reported as follows :—

"The standard attained by the students does not differ materially from that of the two previous years.

"The sketches shewn up by the candidates were still on the whole of a very poor order, and we consider that the results to be obtained by the constant study and daily practice of simple freehand sketching should be impressed upon the students. To engineers of all kinds as well as to mining engineers a facility in sketching parts of machines, or outlines of engineering operations is of the greatest value."

During the session the classes were inspected by Professor E. H. Roberton, and the following extract from his report may be quoted :—

" The meagreness of the home work sent in is to be deplored, and I should like to see some method instituted by which the average student will be induced not to regard so slightly as heretofore his entering upon the course. The persuasive effect of forbidding him to sit for examination unless he gains a certain percentage during the session has largely failed. The proposed prizes may have more effect. But I am of opinion that the most steadying effect would be gained by the institution of a small deposit of caution money, returnable if the student qualifies for and sits at the examination. Forfeited caution money might go to swell the prizes.

" I am not convinced of the desirability of the distribution of lithographed sketches and diagrams to the students. They save the students a certain amount of trouble, but it is trouble which they should not be saved. On the other hand we cannot expect the lecturer to execute complicated drawings on the blackboard. My experience is that the best results are to be gained by the actual drawing on the blackboard of simpler details, while more complicated diagrams are placed in good positions on the walls for a considerable time both before and after the lecture."

In the last annual report reference was made to a proposal for the removal of the Mining Department of Sibpur College, Calcutta, and its incorporation into a mining and technical institute at one of the coal mining centres. A comprehensive scheme has since been drawn out and submitted to Government. The proposed site for the building is at Dhanbaid, close to the Jharia coalfield.

MINING AND GEOLOGICAL INSTITUTE OF INDIA.

The total membership of the Institute at the end of the year, including subscribers, was 308. Four meetings were held during the year. In addition to the above meetings, several meetings of the Jharia and Raniganj coalfields branches have been held, at which discussions have taken place. A subcommittee has been appointed to investigate the question of subsidence in the Bengal coalfields. The Government prize for the best paper read during the year was awarded to Mr. E. S. Tarlton. Three prizes of the value of Rs. 100 each, consisting of books, have been offered by the Institute for the best paper on each of the following subjects :—

(*a*) Laying out a pit bottom for an Indian colliery,

(*b*) Housing and sanitation of mine labour in India, and

(*c*) The application of the various systems of electric haulage to Indian mines.

The revision of the geological map of the Raniganj coalfield undertaken by a sub-committee of the members has been completed. The sheets, on scales of both 1″=1 mile and 4″=1 mile, are on sale at the office of the Institute, 12 Dalhousie Square, Calcutta.

BOARD OF EXAMINERS FOR COAL MINE MANAGERS' CERTIFICATES.

No change is to be reported among the non-official members of the Board. The Board therefore was the same as that of last year, *viz.*, Mr. G. F. Adams, Chief Inspector of Mines in India (ex-officio President), and Messrs. S. Heslop and R. J. Browne.

During the year seven meetings were held.

There were twelve applicants for first class Indian certificates of competency in lieu of British certificates, and they were all granted certificates.

One first class certificate of service was granted.

An examination for certificates of competency was held at Dhanbaid in the office of the Department of Mines on the 19th and 20th February 1913 at which thirty-one candidates sat for first class certificates and sixty-seven for

second class certificates. Competency certificates were granted to six first class and fifteen second class candidates.

The examiners were Messrs. T. Adamson, Glen George and R. R. Simpson (Official Examiner and Secretary).

MINING BOARDS IN BENGAL AND BIHAR.

The Bengal Mining Board held one meeting during the year when the draft rules under the Bengal Mining Settlements Act were considered.

The non-official members of the Board were Messrs. W. Graham and Glen George.

The Mining Board for Bihar and Orissa, constituted in 1912, held its first meeting during 1913. The subject under consideration was the draft rules under the Bengal Mining Settlements Act.

The non-official members were Messrs. T. H. Ward and R. G. M. Bathgate.

OFFICIAL DUTIES IN 1913.

Mr. G. F. Adams was Chief Inspector of Mines in India.

Mr. R. R. Simpson was Inspector of Mines, No. 1 Circle. From the beginning of the year to the 19th March 1913 he had charge of a part of No. 2 Circle in addition to his own duties. He was granted privilege leave for three months combined with five months furlough from the 20th March 1913. He resumed charge of No. 1 Circle on the 24th November 1913.

Mr. G. C. Leach was Inspector of Mines, No. 2 Circle. He returned from combined leave on the 26th October 1913 and had charge of No. 1 Circle from the 26th October 1913 to the 23rd November 1913, resuming charge of No. 2 Circle on the 24th November 1913.

Mr. C. J. E. David was Inspector of Mines, No. 3 Circle. From the beginning of the year up to the 20th March 1913 he had charge of part of No. 2 Circle in addition to his own duties. From the 21st March 1913 to the 25th October 1913 he had charge of Nos. 1, 2 and 3 Circles and from the 26th October 1913 to 23rd November 1913 he had charge of No. 2 Circle in addition to his own duties.

Mr. J. J. Turnbull was appointed Junior Inspector of Mines and took up his duties as such from the 18th December 1913.

I have the honour to be,

SIR,

Your most obedient servant,

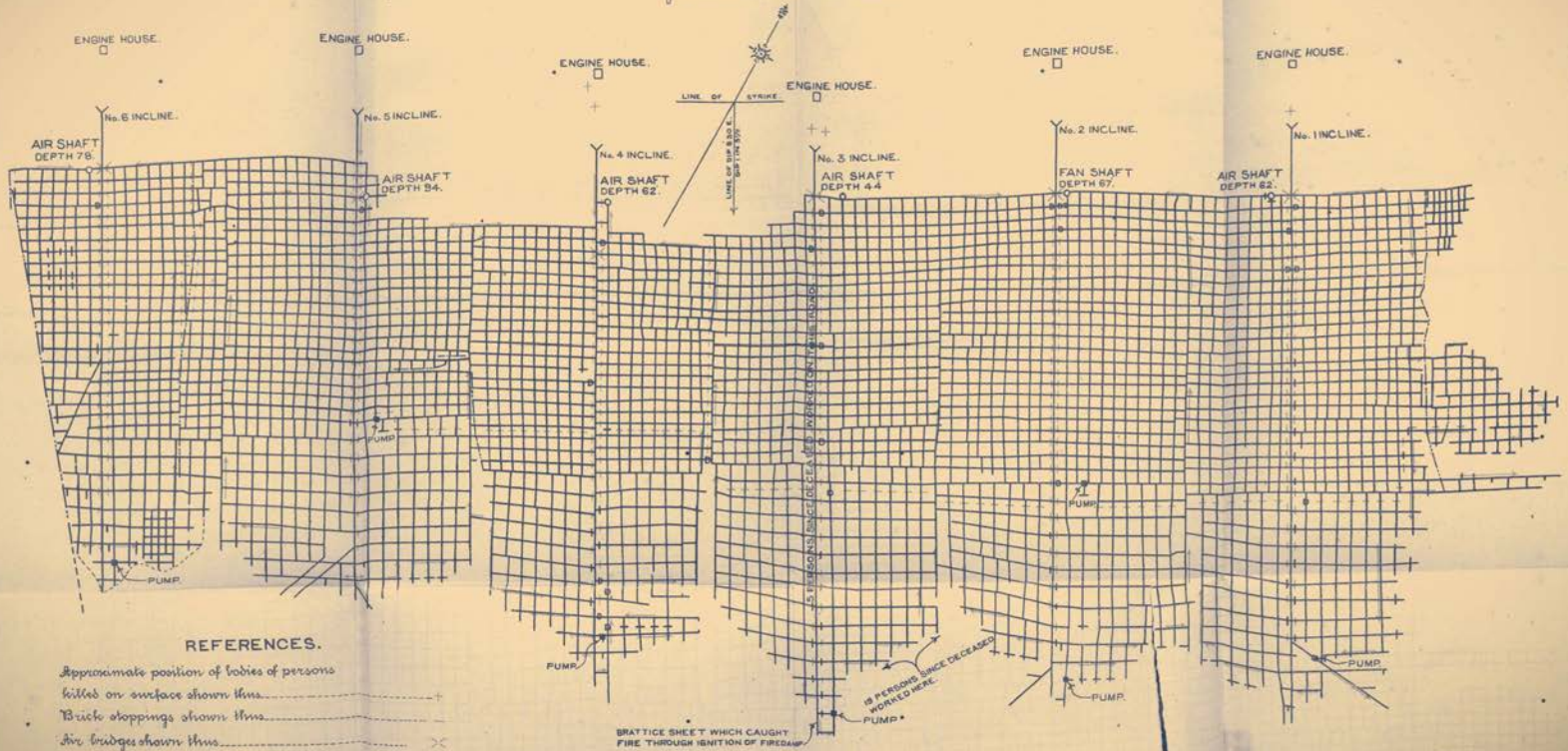
R. R. SIMPSON,

Offg. Chief Inspector of Mines in India.

PLAN ILLUSTRATING REPORT ON FATAL ACCIDENT BY EXPLOSION OF FIREDAMP AT THE EQUITABLE COAL Co., Ltd. CHOWRASI MINE

SCALE 1 INCH=300 FEET.

General plan of mine.



REFERENCES.

Approximate position of bodies of persons killed on surface shown thus ..... +
Brick stoppings shown thus ..... –
Air bridges shown thus ..... ×
Brattice sheets shown thus ..... –
Doors shown thus ..... D
Direction of air current shown thus ..... →
Dykes shown thus ..... –

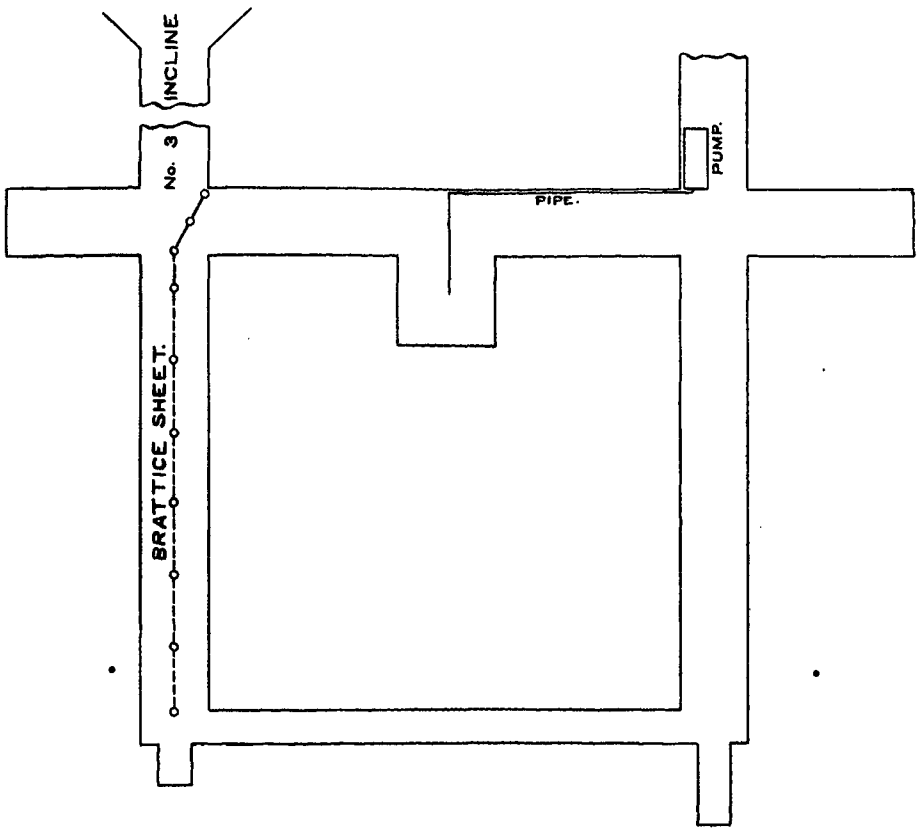
LITHO BY THACKER SPINK & CO. CALCUTTA.

PLAN B.

PLAN ILLUSTRATING REPORT ON
FATAL ACCIDENT BY EXPLOSION OF FIREDAMP
AT
THE EQUITABLE COAL Co., Ltds CHOWRASI MINE

SCALE 1 INCH=20 FEET

Plan showing position of brattice sheet at face of No.3 Incline.



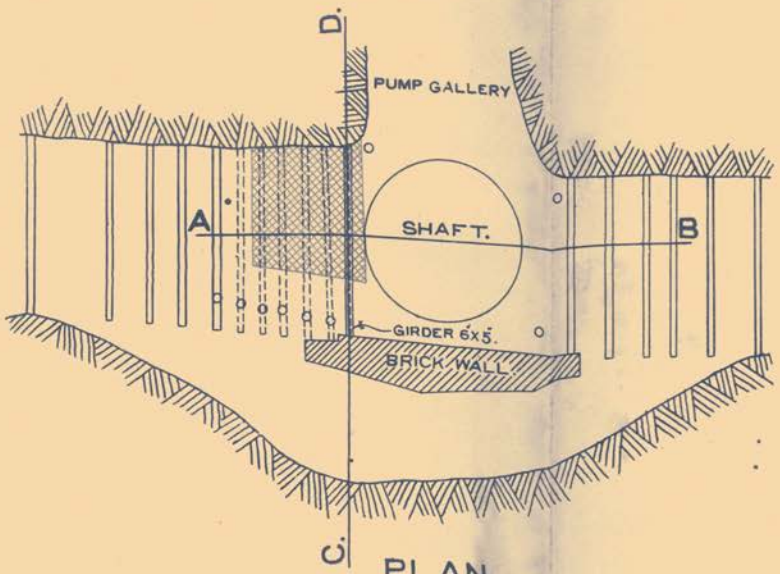
PLAN & SECTIONS ILLUSTRATING REPORT ON

FATAL ACCIDENT BY FALL OF GROUND IN SHAFT

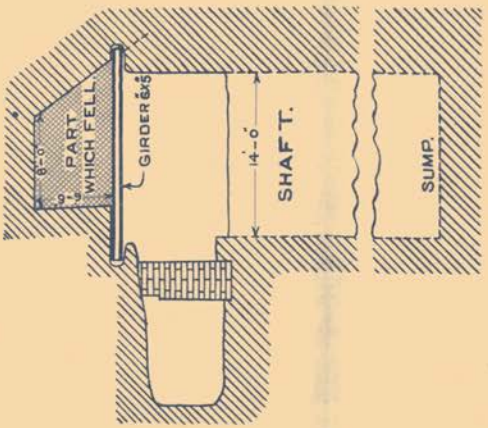
AT

THE EASTERN COAL Co. LTD'S BHOWRA MINE

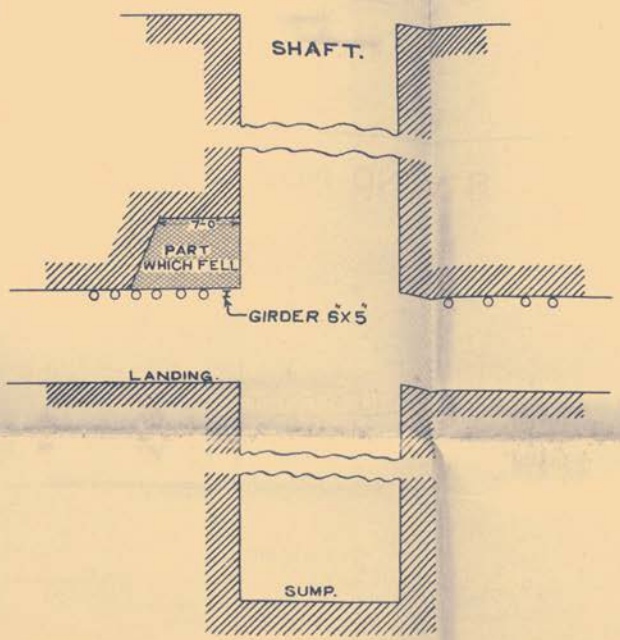
SCALE 1 INCH=10 FEET.



PLAN

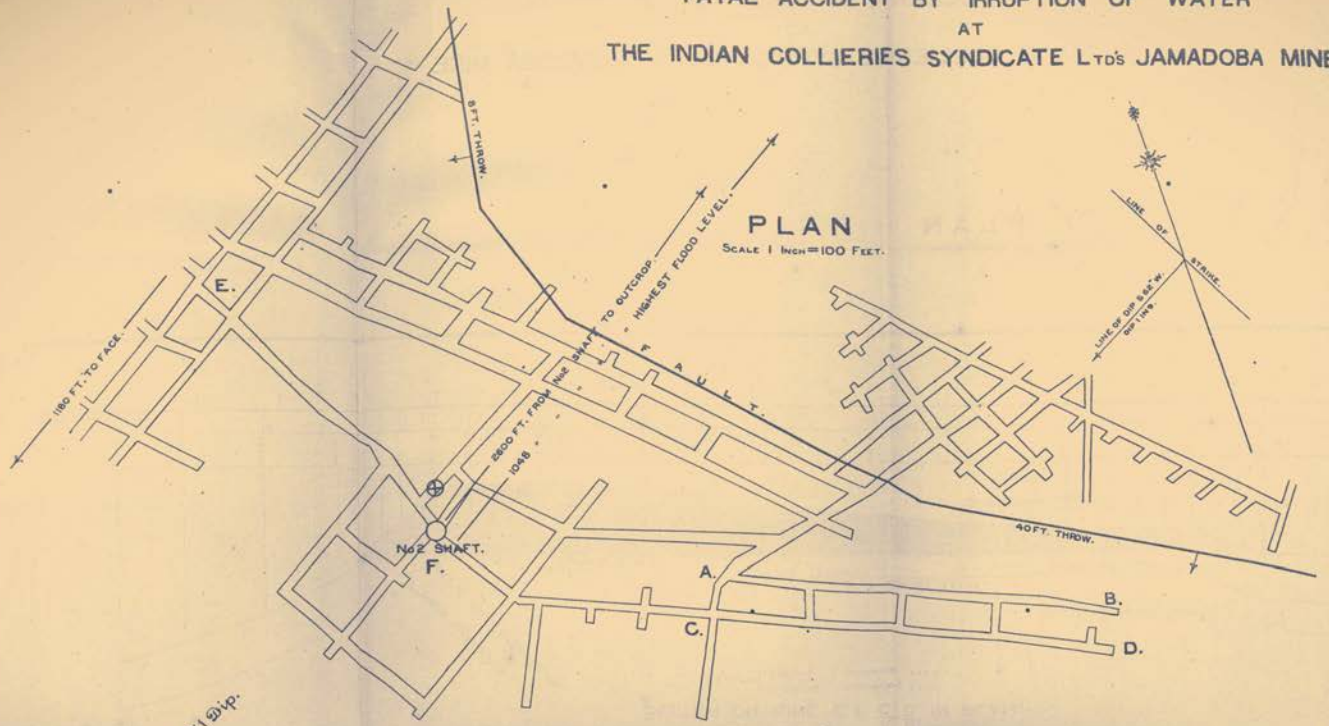


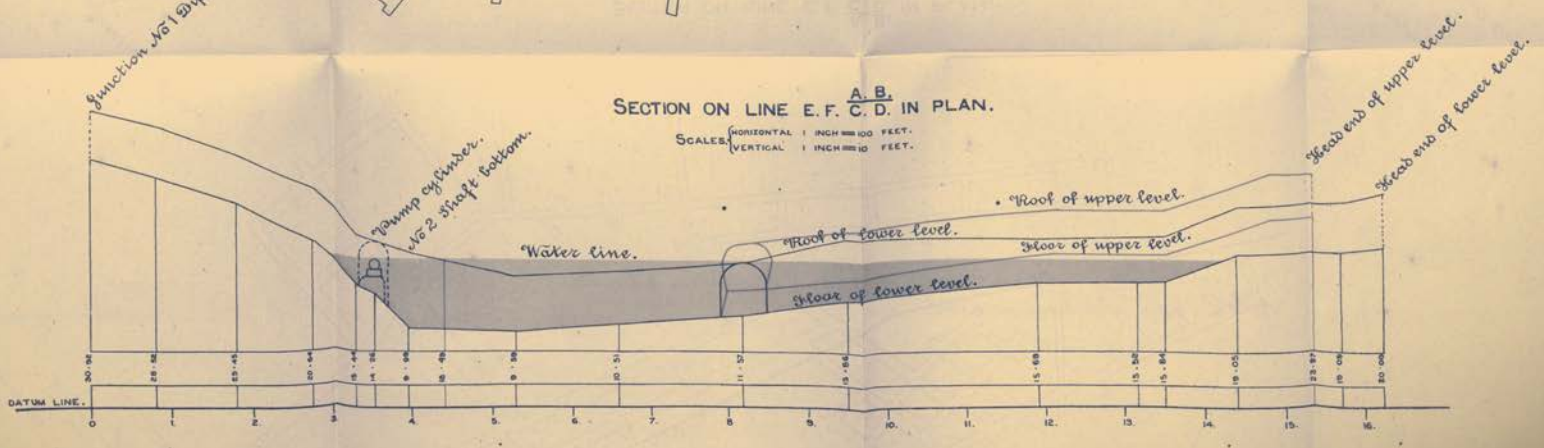
SECTION ON C.D.



SECTION ON A.B.

PLAN AND SECTION ILLUSTRATING REPORT ON FATAL ACCIDENT BY IRRUPTION OF WATER AT THE INDIAN COLLIERIES SYNDICATE LTD'S JAMADOBA MINE

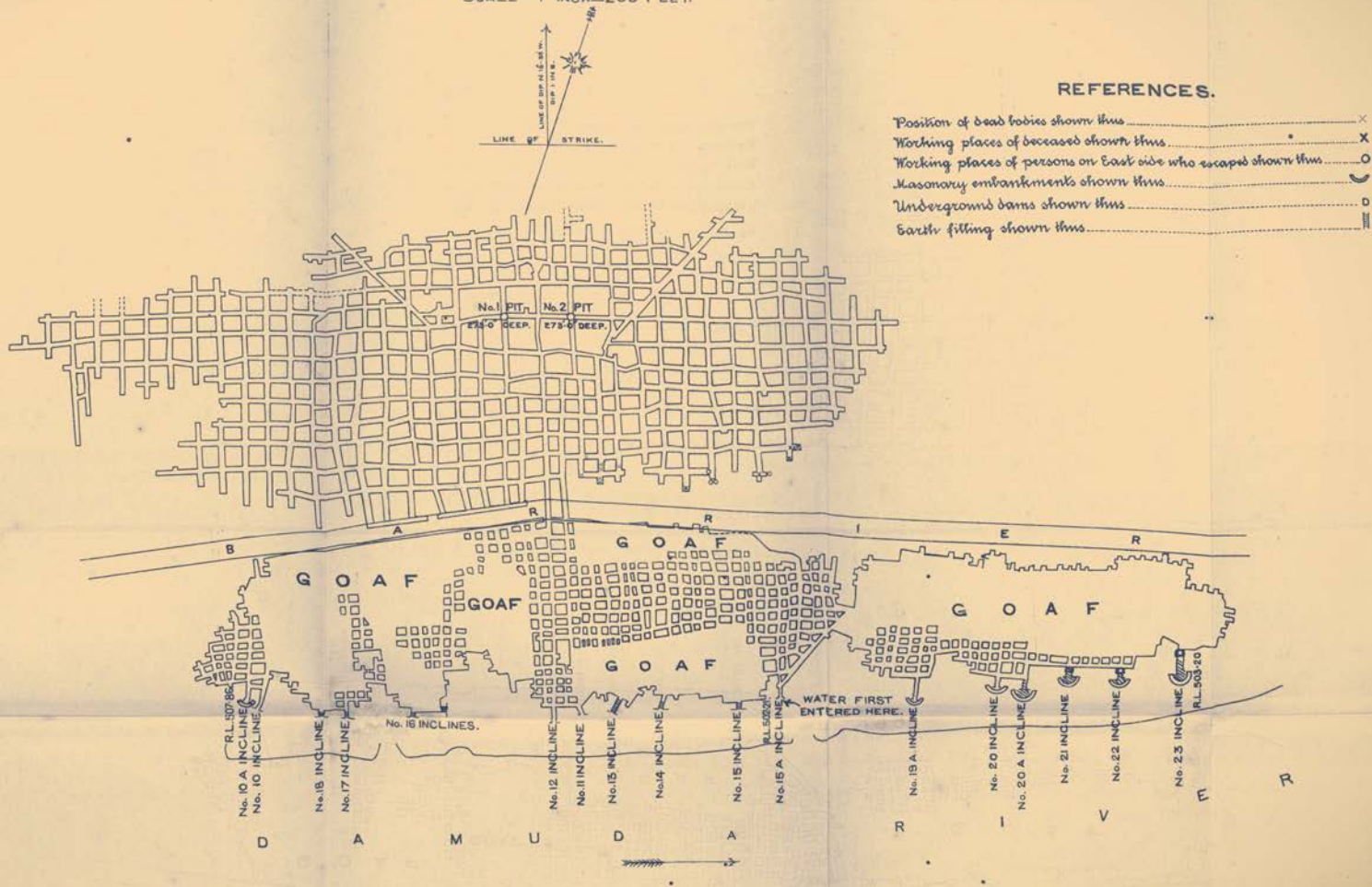




LITHO. BY THACKER, SPINK & CO. CALCUTTA.

PLAN ILLUSTRATING REPORT ON FATAL ACCIDENT BY IRRUPTION OF WATER AT THE BENGAL BHATDIH COAL Co., LTD. BHATDIH MINE

SCALE 1 INCH = 200 FEET.



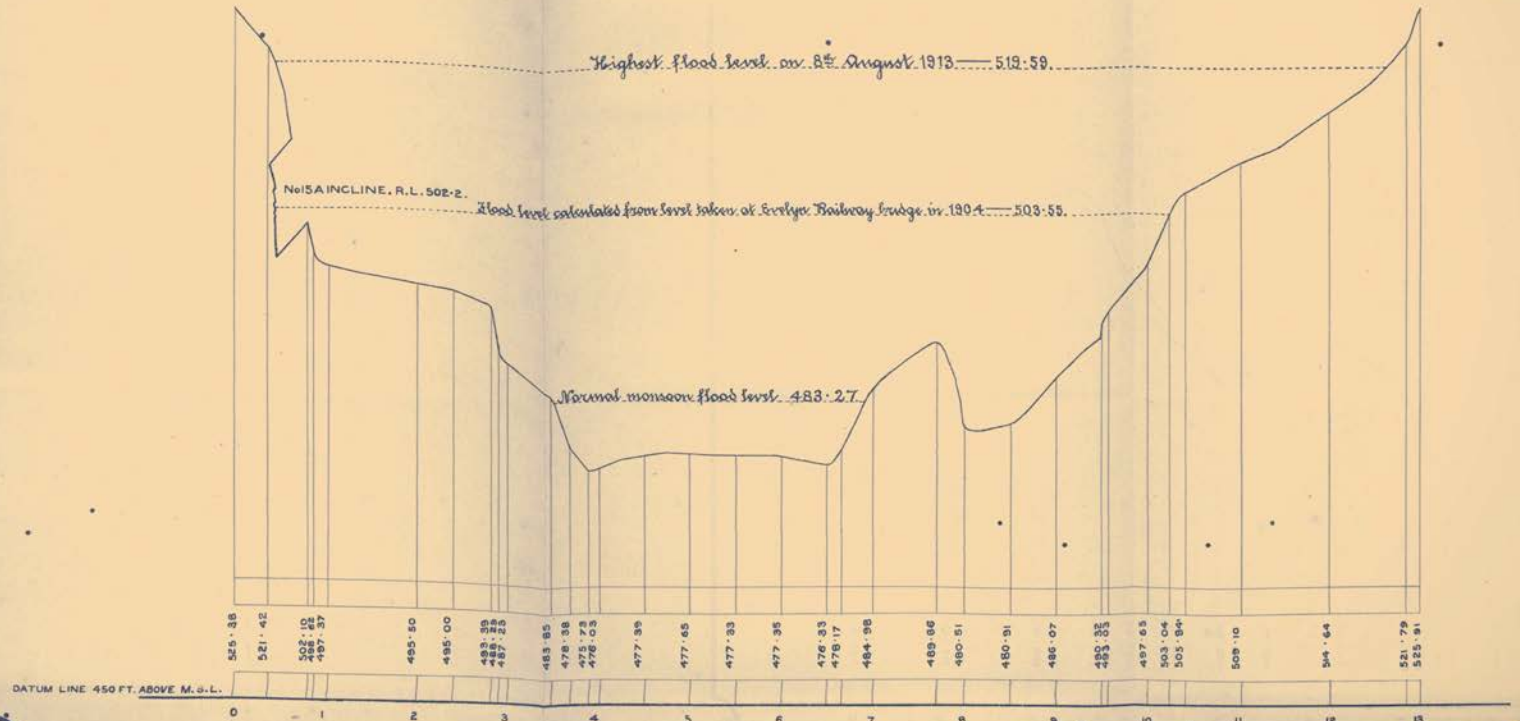
REFERENCES.

Position of dead bodies shown thus	×
Working places of deceased shown thus	• X
Working places of persons on East side who escaped shown thus	O
Masonary embankments shown thus	
Underground dams shown thus	D
Earth filling shown thus	

LITHO BY THACKER SPINK & CO CALCUTTA.

SECTION ILLUSTRATING REPORT ON
FATAL ACCIDENT BY IRRUPTION OF WATER
AT
THE BENGAL BHATDIH COAL Co LTD'S BHATDIH MINE

SCALES { HORIZONTAL 1 INCH = 100 FEET.
VERTICAL 1 INCH = 10 FEET.



LITHO. BY THACKER, SPINK & CO., CALCUTTA.

APPENDIX I.

STATISTICS OF MINES AND MINERALS.

Table No. 1.

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1913.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Total output.	Average number of persons employed daily in and about the mines.								Grand total below and above ground.
								Below ground.				Above ground.				
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
							A.—COAL.									
							Tons.									
Bihar and Orissa	Hazaribagh: Bokaro-Ramgarh	10	..	10	...	...	2,855	43	76	5	124	34	21	5	60	184
	Hazaribagh: Giridih	9	5	4	5	5	806,810	3,668	1,457	...	5,125	1,908	1,230	65	3,203	8,328
	Hazaribagh: Jharia	6	..	6	..	...	2,087	73	24	4	101	36	37	2	75	176
	Manbhum: Jharia	251	132	119	89	173	8,606,223	24,439	19,684	291	44,414	17,163	8,279	1,388	26,830	71,244
	Manbhum: Raniganj	83	8	75	38	68	674,864	2,772	1,346	18	4,136	1,181	720	51	1,952	6,088
	Sonthal Parganas: Raniganj	2	...	2	2	2	2,532	12	9	...	21	2	3	...	5	26
	Sonthal Parganas: Rajmahal	2	...	2	...	...	2,868	12	11	...	23	18	13	..	31	54
	Palamau, Daltonganj	1	1	...	...	...	85,345	281	213	7	501	214	44	14	272	773
	Sambalpur, Hingir-Rampur	1	1	..	1	1	42,805	255	74	...	329	148	12	...	160	489
	Total	365	147	218	135	249	10,226,389	31,555	22,894	325	54,774	20,704	10,359	1,525	32,588	87,362
Bengal	Bankura, Raniganj	2	...	2	2	2	5,225	40	22	...	62	4	5	..	9	71
	Birbhum „	1	...	1	1	1	2,461	16	9	...	25	8	2	...	10	35
	Burdwan „	181	152	29	86	158	4,642,166	16,924	8,069	134	25,127	8,108	4,857	355	13,320	38,447
	Total	184	152	32	89	161	4,649,852	16,980	8,100	134	25,214	8,120	4,864	355	13,339	38,553

STATISTICS OF MINES AND MINERALS—*contd.*

Table No. 1—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1913.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Total output.	Average number of persons employed daily in and about the mines.								Grand total below and above ground.
								Below ground.				Above ground.				
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
							A.—COAL—*contd.*									
							Tons.									
Central Provinces	Chhindwara, Pench Valley	5	4	1	2	3	89,805	391	199	24	614	126	72	20	218	832
	Narsinghpur, Mohpani	1	1	...	1	2	64,887	513	247	...	760	369	49	...	418	1,178
	Chanda, Ballarpur	2	2	...	1	2	80,959	493	...	...	493	175	6	...	181	674
	Total	8	7	1	4	7	235,651	1,397	446	24	1,867	670	127	20	817	2,684
Panjab	Jhelum	6	...	6	5	5	46,155	584	...	1	585	243	...	18	261	846
	Shahpur	2	..	2	...	...	4,885	12	...	...	12	34	...	...	34	46
	Total	8	...	8	5	5	51,040	596	...	1	597	277	...	18	295	892
Assam	Lakhimpur	10	7	3	...	...	270,364	1,441	217	...	1,658	517	236	47	800	2,458

Baluchistan	Bolan	1	...	1	...	...	990	12	...	...	12	4	...	...	4	16
	Kalat	1	...	1	...	...	5	10	...	...	10	...	...	...	...	10
	Quetta-Pishin	8	...	8	...	...	6,155	62	..		62	39	..	...	39	101
	Sibi-Khost	15	1	14	1	10	45,585	606	...	...	606	301	...	16	317	923
	Loralai	1	...	1	...	...	197	22	...	...	22	15	...	...	15	37
	TOTAL	26	1	25	1	10	52,932	712	...	...	712	359	...	16	375	1,087
North-West Frontier Province	Hazara	1	...	1	...	...	90	6	...	...	6	...	...	...	...	6
	GRAND TOTAL (COAL) FOR 1913.	602	314	288	234	432	15,486,318	52,687	31,657	484	84,828	30,647	15,586	1,981	48,214	133,042
	" " OF PRECEDING YEAR.	527	276	251	401	686	14,044,368	48,920	28,504	506	17,930	27,910	13,717	1,835	43,462	121,392
	DIFFERENCE	+75	+38	+37	—167	—254	+1,441,950	+3,767	+3,153	—22	+6,898	+2,737	+1,869	+146	+4,752	+11,650
	B.—MICA.															
							Cwts.									
Bihar and Orissa	Monghyr	13	...	13	...	...	1,411	181	130	...	311	50	63	23	136	447
	Hazaribagh	503	3	500	71	71	23,389	3,497	1,713	401	5,611	1,914	1,479	1,004	4,397	10,008
	Gaya	30	...	30	4	4	6,424	765	322	35	1,122	201	259	245	705	1,827
	Sonthal Parganas	1	...	1	...	...	15	16	8	...	24	...	..	8	8	32
	TOTAL	547	3	544	75	75	31,239	4,459	2,173	436	7,068	2,165	1,801	1,280	5,246	12,314
Madras	Coimbatore	2	...	2	...	...	4	22	10	...	32	.	...	...	...	32
	Nellore	73	6	67	36	36	9,810	2,366	1,441	245	4,052	541	603	523	1,667	5,719
	Salem	4	...	4	1	1	924	64	...	...	64	56	105	26	187	251
	TOTAL	79	6	73	37	37	10,738	2,452	1,451	245	4,148	597	708	549	1,854	6,002

Table No. 1—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1913.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines: Worked by mechanical power.	Number of mines: Not worked by mechanical power.	Number of mines inspected during the year: Number of mines inspected.	Number of mines inspected during the year: Number of inspections.	Total output.	Average number of persons employed daily in and about the mines: Below ground: Adult males.	Below ground: Adult females.	Below ground: Children (under 12).	Below ground: Total below ground.	Above ground: Adult males.	Above ground: Adult females.	Above ground: Children (under 12).	Above ground: Total above ground.	Grand total below and above ground.
	B.—MICA—*contd.*						Cwts.									
Rajputana	Ajmer	4	...	4	...	...	1,036	147	25	...	172	111	24	10	145	317
	Merwara	2	...	2	...	...	637	31	7	...	38	24	20	19	63	101
	TOTAL	6	...	6	...	..	1,673	178	32	...	210	135	44	29	208	418
	GRAND TOTAL (MICA) FOR 1913.	632	9	623	112	112	43,650	7,089	3,656	681	11,426	2,897	2,553	1,858	7,308	18,734
	,, ,, OF PRECEDING YEAR.	473	9	464	7	7	41,660	6,206	3,656	554	10,416	2,262	2,471	1,872	6,605	17,021
	DIFFERENCE	+159	...	+159	+105	+105	+1,990	+883	...	+127	+1,010	+635	+82	—14	+703	+1,713
	C.—MANGANESE.						Tons.									
Central Provinces	Nagpur	21	1	20	4	6	218,789	1,413	1,170	...	2,583	536	367	38	941	3,524
	Bhandara	12	...	12	1	1	57,934	489	400	10	899	177	148	56	381	1,280
	Balaghat	15	..	15	1	2	197,297	2,248	1,757	60	4,065	309	241	41	591	4,656
	Chhindwara	2	1	1	1	1	78,330	365	291	2	658	45	11	...	56	714
	TOTAL	50	2	48	7	10	552,350	4,515	3,618	72	8,205	1,067	767	135	1,969	10,174
Madras	Vizagapatam	8	2	6	3	3	44,127	1,345	829	58	2,232	199	128	30	357	2,589

Bombay	Panch Mahals . . .	2	1	1	2	3	40,914	573	299	47	919	212	40	26	278	1,197
	GRAND TOTAL (MANGANESE) FOR 1913.	60	5	55	12	16	637,391	6,433	4,746	177	11,356	1,478	935	191	2,604	13,960
	„ „ OF PRECEDING YEAR.	47	8	39	...	...	423,464	4,281	2,686	94	7,061	2,159	1,616	196	3,971	11,032
	DIFFERENCE . . .	+13	—3	+16	+12	+16	+213,927	+2,152	+2,060	+83	+4,295	—681	—681	—5	—1,367	+2,928
	D.—LIMESTONE.															
							Tons.									
Central Provinces . .	Jabalpur, Katni . . .	24	3	21	22	25	70,359	827	1,149	55	2,031	240	373	33	646	2,677
Panjab	Hoshiarpur	1	...	1	...	...	900	51	...	...	51	15	..	2	17	68
	GRAND TOTAL (LIMESTONE) FOR 1913.	25	3	22	22	25	71,259	878	1,149	55	2,082	255	373	35	663	2,745
	„ „ OF PRECEDING YEAR.	21	1	20	..	...	91,784	742	762	63	1,567	446	631	44	1,121	2,688
	DIFFERENCE . . .	+4	+2	+2	+22	+25	—20,525	+136	+387	—8	+515	—191	—258	—9	—458	+57
	E.—SALT.															
							Tons.									
Panjab	Shahpur	1	...	1	...	...	5,233	16	14	4	34	...	...	...	...	34
	Jhelum	2	...	2	1	6	123,944	391	344	56	791	49	...	...	49	840
	Mianwali	1	...	1	...	...	9,363	48	..	10	58	...	...	...	...	58
	GRAND TOTAL (SALT) FOR 1913.	4	...	4	1	6	138,540	455	358	70	883	49	...	...	49	932
	„ „ OF PRECEDING YEAR.	4	...	4	2	4	131,233	481	365	74	920	50	...	...	50	970
	DIFFERENCE . . .	...	...	...	—1	+2	+7,307	—26	—7	—4	—37	—1	...	...	—1	—38

STATISTICS OF MINES AND MINERALS—*contd*

Table No. 1—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1913.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines: Worked by mechanical power.	Number of mines: Not worked by mechanical power.	Number of mines inspected during the year: Number of mines inspected.	Number of mines inspected during the year: Number of inspections.	Total output.	Average number of persons employed daily in and about the mines: Below ground: Adult males.	Below ground: Adult females.	Below ground: Children (under 12).	Below ground: Total below ground.	Above ground: Adult males.	Above ground: Adult females.	Above ground: Children (under 12).	Above ground: Total above ground.	Grand total below and above ground.
							F.—GEMS.									
							(a) Rubies.									
Burma	Mogok	...	...	...	...	...	Carats. 203,925	769	...	...	769	1,046	...	...	1,046	1,815
							(b) Sapphires.									
	Mogok	9	1	8	...	...	21,353									
							(c) Spinels.									
	Mogok	...	...	...	...	...	53,428									
	TOTAL	9	1	8	..	...	278,706	769	...	...	769	1,046	...	...	1,046	1,815
							(d) Diamonds.									
Madras	Kurnool	...	...	...	...	...	...	...	...	..	..	...	...	...	...	...
	GRAND TOTAL (GEMS) FOR 1913.	9	1	8	...	...	278,706	769	...	...	769	1,046	...	...	1,046	1,815
	„ „ OF PRECEDING YEAR.	9	...	9	...	...	323,247	776	5	..	781	938	...	...	938	1,719
	DIFFERENCE	...	+1	—1	...	...	—44,541	—7	—5	...	—12	+108	...	...	+108	+96

G.—SLATE.

							Tons.									
Bihar and Orissa	Monghyr	6	...	6	...	...	2,650	39	20	...	59	196	30	34	260	319
Panjab	Kangra	5	...	5	...	...	5,267	115	5	6	126	185	45	39	269	395
	Gurgaon	4	...	4	...	...	3,553	165	...	52	217	44	...	10	54	271
	TOTAL	9	...	9	...	...	8,820	280	5	58	343	229	45	49	323	666
	GRAND TOTAL (SLATE) FOR 1913.	15	...	15	...	...	11,470	319	25	58	402	425	75	83	583	985
	" " OF PRECEDING YEAR.	16	...	16	13	19	9,991	283	24	38	345	470	97	67	634	979
	DIFFERENCE	−1	...	−1	−13	−19	+1,479	+36	+1	+20	+57	−45	−22	+16	−51	+6

H.—GOLD.

							Ozs.									
Madras	Anantapur	3	3	...	3	6	11,019	499	...	...	499	962	211	111	1,284	1,783
	GRAND TOTAL (GOLD) FOR 1913.	3	3	...	3	6	11,019	499	..	...	499	962	211	111	1,284	1,783
	" " OF PRECEDING YEAR.	3	3	...	...	...	7,269	535	...	...	535	880	298	43	1,221	1,756
	DIFFERENCE	...	...	...	+3	+6	+3,750	−36	...	...	−36	+82	−87	+68	+63	+27

I.—IRON.

							Tons.									
Bihar and Orissa	Singhbhum	2	...	2	1	1	97,527	450	185	70	705	173	320	96	589	1,294
Central Provinces	Jabalpur	1	...	1	...	...	844	25	47	20	92	...	5	4	9	101
	GRAND TOTAL (IRON) FOR 1913.	3	...	3	1	1	98,371	475	232	90	797	173	325	100	598	1,395
	" " OF PRECEDING YEAR.	2	...	2	1	4	79,383	775	504	129	1,408	56	45	31	132	1,540
	DIFFERENCE	+1	...	+1	...	−3	+18,988	−300	−272	−39	−611	+117	+280	+69	+466	−145

STATISTICS OF MINES AND MINERALS—*contd.*

Table No. 1—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1913.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines.		Number of mines inspected during the year.		Total output.	Average number of persons employed daily in and about the mines.								Grand total below and above ground.
								Below ground.				Above ground.				
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
							J.—WOLFRAM. Cwts.									
Burma	Tavoy	34	...	34	17	20	27,427	1,353	24	5	1,382	840	110	36	986	2,368
	Mergui	1	...	1	1	1	93	88	...	...	88	75	...	...	75	163
	Total	35	...	35	18	21	27,520	1,441	24	5	1,470	915	110	36	1,061	2,531
	GRAND TOTAL (Wolfram) for 1913.	35	...	35	18	21	27,520	1,441	24	5	1,470	915	110	36	1,061	2,531
	„ „ of preceding year.	29	...	29	...	...	25,401	954	26	1	981	1,049	132	10	1,191	2,172
	Difference	+6	...	+6	+18	+21	+2,119	+487	—2	+4	+489	—134	—22	+26	—130	+359
							K.—MAGNESITE. Tons.									
Madras	Salem	4	...	4	1	1	14,086	326	375	249	950	120	...	9	129	1,079
	Total of preceding year	1	...	1	...	...	15,379	399	466	165	1,030	69	21	5	95	1,125
	Difference	+3	...	+3	+1	+1	—1,293	—73	—91	+84	—80	+51	—21	+4	+34	—46

					L.—CHROMITE.											
							Cwts.									
Baluchistan	Quetta-Pishin	1	...	1	...	...	460	6	...	...	6	2	...	...	2	8
	Zhob	9	...	9	...	...	67,820	...	...	...	...	62	...	...	62	62
	GRAND TOTAL (CHROMITE) FOR 1913.	10	...	10	...	...	68,280	6	...	...	6	64	...	...	64	70
	TOTAL OF PRECEDING YEAR	2	...	2	...	...	120	5	...	...	5	4	...	...	4	9
	DIFFERENCE	+8	...	+8	...	...	+68,160	+1	...	...	+1	+60	...	...	+60	+61
					M.—COPPER ORE.											
							Tons.									
Bihar and Orissa	Singhbhum	1	1	...	1	5	3,639	408	...	...	408	560	182	65	807	1,215
	TOTAL OF PRECEDING YEAR	1	1	...	1	2	8,984	593	...	...	593	380	172	45	597	1,190
	DIFFERENCE	...	...	...	...	+3	−5,345	−185	...	...	−185	+180	+10	+20	+210	+25
					N.—FULLER'S EARTH.											
							Tons.									
Central Provinces	Jabalpur	1	...	1	...	...	103	...	..	...	...	...	...	...	...	... *
	TOTAL OF PROCEDING YEAR	1	...	1	...	...	98	...	...	...	...	...	...	...	...	...
	DIFFERENCE	...	...	...	...	...	+5	...		...	...	...	...	...	...	...
					O.—CLAY.											
							Tons.									
Bihar and Orissa	Palamau	1	...	1	...	...	55	5	...	...	5	4	...	...	4	9
Central Provinces	Jabalpur	3	1	2	3	3	22,648	58	93	...	151	30	...	...	30	181
Delhi	Delhi	1	...	1	1	1	962	65	...	...	65	65	...	...	65	130
Madras	Nellore	1	...	1	...	...	...	5	5	...	10	...	...	...	...	10
	GRAND TOTAL (CLAY) FOR 1913.	6	1	5	4	4	23,665	133	98	...	231	99	...	...	99	330
	TOTAL OF PRECEDING YEAR	3	...	3	1	1	18,285	39	55	...	94	27	9	...	36	130
	DIFFERENCE	+3	+1	+2	+3	+3	+5,380	+94	+43	...	+137	+72	−9	...	+63	+200
					P.—GALENA.											
							Cwts.									
Central Provinces	Drug	1	...	1	...	...	30	7	35	...	42	...	...	...	...	42

* Figures included with that for Central Provinces Limestone.

STATISTICS OF MINES AND MINERALS—*contd.*

Table No. 1—*contd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1913.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines: Worked by mechanical power.	Number of mines: Not worked by mechanical power.	Number of mines inspected during the year: Number of mines inspected.	Number of mines inspected during the year: Number of inspections.	Total output.	Average number of persons employed daily in and about the mines: Below ground: Adult males.	Below ground: Adult females.	Below ground: Children (under 12).	Below ground: Total below ground.	Above ground: Adult males.	Above ground: Adult females.	Above ground: Children (under 12).	Above ground: Total above ground.	Grand total below and above ground.
							P.—GALENA.—contd. Cwts.									
Madras	Kurnool	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (GALENA) FOR 1913.	1	...	1	...	..	30	7	35	...	42	...	...	...	...	42
	„ „ OF PRECEDING YEAR.	1	...	1	...	..	160	13	14	8	35	3	3	...	6	41
	DIFFERENCE	...	..	...	...	...	—130	—6	+21	—8	+7	—3	—3	...	—6	+1
							Q.—TIN. Cwts.									
Bihar and Orissa	Hazaribagh	1	...	1	...	...	1	4	...		4	8	...	...	8	12
Burma	Mergui	1	...	1	1	1	419	...	...	...	...	...	...	...	...	...
	Tavoy	4	1	3	1	1	1,314	...	...	...	...	130	...	...	130	130
	TOTAL	5	1	4	2	2	1,733	...	...	...	...	130	...	...	130	130
	GRAND TOTAL (TIN) FOR 1913.	6	1	5	2	2	1,734	4	...	...	4	138	...	...	138	142
	„ „ OF PRECEDING YEAR.	2	..	2	...	...	1,265	70	...	...	70	85	...	...	85	155
	DIFFERENCE	+4	+1	+3	+2	+2	+469	—66	...	...	—66	+53	...	...	+53	—13

							R.—STEATITE.									
							Cwts.									
Central Provinces . .	Jabalpur	3	...	3	...	...	13,212	60	42	...	102	...	...	...	...	102
Madras . .	Kurnool	1	...	1	..	...	10,908	57	110	...	167	23	24	...	47	214
	GRAND TOTAL (STEATITE) FOR 1913.	4	...	4	...	...	24,120	117	152	...	269	23	24	...	47	316
	„ „ OF PRECEDING YEAR.	1	...	1	...	...	11,200	24	36	...	60	4	8	...	12	72
	DIFFERENCE . . .	+3	...	+3	...	...	+12,920	+93	+116	...	+209	+19	+16	...	+35	+244
							S.—GRAPHITE.									
							Cwts.									
Madras	Ramnad	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...
	TOTAL of preceding year .	1	...	1	...	...	...	4	..	...	4	6	2	...	8	12
	DIFFERENCE . . .	—1	...	—1	...	...	...	—4	...	...	—4	—6	—2	...	—8	—12
							T.—CORUNDUM.									
							Cwts.									
Madras	Trichinopoly . . .	4	...	4	...	...	1,650	28	39	3	70	21	41	12	74	144
	TOTAL of preceding year .	1	...	1	...	...	2,494	21	88	4	113	36	74	34	144	257
	DIFFERENCE . . .	+3	...	+3	...	...	—844	+7	—49	—1	—43	—15	—33	—22	—70	—113
							U.—SAMARSKITE.									
							Cwts.									
Madras	Nellore	1	..	1	...	...	3	...	...	...	...	...	...	...	...	... †
	TOTAL of preceding year .	1	...	1	...	...	29	...	...	...	...	...	...	...	..	... †
	DIFFERENCE . . .	...	...	...	...	...	—26	...	...	...	..	...	...	...	...	...

* Figures included with Burma (Mergui) Wolframfigures.
† Figures included with Madras (Nellore) Mica figures.

STATISTICS OF MINES AND MINERALS—*concld.*

Table No. 1—*concld.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1913.

Province.	District and mineral field.	Number of mines under the scope of the Act.	Number of mines: Worked by mechanical power.	Number of mines: Not worked by mechanical power.	Number of mines inspected during the year: Number of mines inspected.	Number of mines inspected during the year: Number of inspections.	Total output.	Average number of persons employed daily in and about the mines: Below ground: Adult males.	Below ground: Adult females.	Below ground: Children (under 12).	Below ground: Total below ground.	Above ground: Adult males.	Above ground: Adult females.	Above ground: Children (under 12).	Above ground: Total above ground.	Grand total below and above ground.
	GRAND TOTAL (All Minerals.)	1,426	338	1,088	411	631	Tons. 16,484,842 Cwts. 166,987 Ounces. 11,019 Carats. 278,706	72,074	42,546	1,872	116,492	39,872	20,415	4,481	64,768	181,260
	GRAND TOTAL of preceding year.	1,147	299	848	426	723	Tons. 14,823,919 Cwts. 82,329 Ounces. 7,269 Carats. 323,247	65,133	37,211	1,636	103,980	36,838	19,296	4,188	60,322	164,302
	Difference . . .	+279	+39	+240	—15	—92	Tons. +1,660,923 Cwts. +84,658 Ounces. +3,750 Carats. —44,541	+6,941	+5,335	+236	+12,512	+3,034	+1,119	+293	+4,446	+16,958

APPENDIX I—*contd.*

Table No. 2.

Number of mines opened and closed during the year ending 31st December 1913.

Province.	District.	Number of mines opened.	Number of mine closed.
	A.—COAL.		
Bihar and Orissa	Hazaribagh — Jharia	4	3
	Hazaribagh — Bokaro-Ramgarh	5	3
	Hazaribagh — Giridih	3	2
	Manbhum — Jharia	19	9
	Manbhum — Raniganj	14	7
	Sonthal Parganas, Rajmahal	1	1
Total		46	25
Bengal	Burdwan-Raniganj	16	12
Baluchistan	Sibi-Khost	8	8
	Quetta-Pishin	1	...
	Kalat	...	1
Total		9	9
Central Provinces	Chanda	1	...
	Chhindwara	1	...
Total		2	...
Assam	Lakhimpur	...	1
Panjab	Jhelum	2	1
Total (Coal)		75	48
	B.—MICA.		
Bihar and Orissa	Monghyr	3	3
	Hazaribagh	199	163
	Gaya	6	3
	Sonthal Parganas	1	1
Total		209	170
Madras	Coimbatore	1	...
	Nellore	22	11
	Salem	1	1
Total		24	12

APPENDIX I—*contd.*

Table No. 2—*contd.*

Number of mines opened and closed during the year ending 31st December 1913—*contd.*

Province	District.	Number of mines opened.	Number of mines closed
Rajputana	Ajmer	1	1
	Merwara	1	...
Total		2	1
Total (Mica)		235	183
	C.—MANGANESE.		
Central Provinces	Bhandara	...	2
	Balaghat	4	2
	Nagpur	1	1
Total		5	5
Madras	Vizagapatam	...	3
Total (Manganese)		5	8
	D.—LIMESTONE.		
Central Provinces	Jabalpur	5	7
Panjab	Hoshiarpur	1	1
Total (Limestone)		6	8
	E.—CHROMITE.		
Baluchistan	Zhob	...	2
	F.—CLAY.		
Central Provinces	Jabalpur	...	1
Madras	Nellore	1	...
Bihar and Orissa	Palamau, Daltonganj	1	...
Total (Clay)		2	1
	G.—IRON.		
Central Provinces	Jabalpur	1	...
	H.—WOLFRAM.		
Burma	Tavoy	5	2
	I.—GEMS.		
Burma	Mogok	1	...
	J.—TIN.		
Bihar and Orissa	Hazaribagh	1	...

APPENDIX I—*concld.*

Table No. 2—*concld.*

Number of mines opened and closed during the year ending 31st December 1913—*concld.*

Province.	District.	Number of mines opened.	Number of mines closed.
	K.—STEATITE.		
Central Provinces . . .	Jabalpur	1	1
Madras	Kurnool	1	...
Total (Steatite) .		2	1
	L.—SLATE.		
Bihar and Orissa . . .	Monghyr	...	3
Panjab	Gurgaon	1	...
Total (Slate) .		1	3
GRAND TOTAL .		334	256

Table No. 3.

The following table shows the fluctuations in the output of the principal minerals raised from mines classed under the Indian Mines Act, 1901. The other minerals raised are gems, slate, gold, iron ore, magnesite, chromite, copper ore, tin, steatite, graphite, fuller's earth, clay, galena, wolfram, corundum, and samarskite :—

Year.	Coal.	Manganese.	Mica.	Limestone.	Salt.
	Tons.	Tons.	Cwts.	Tons.	Tons.
1904 . .	7,561,338	138,733	21,320	50,847	107,413
1905 . . .	7,770,471	204,194	25,548	93,170	94,078
1906 . . .	9,112,663	436,442	50,438	48,836	118,023
1907 . . .	10,526,468	642,082	44,919	73,222	101,703
1908 . . .	12,149,020	494,942	46,208	101,569	93,779
1909 . . .	11,294,227	357,205	32,011	56,502	126,987
1910 . .	11,387,716	468,669	21,375	81,258	119,867
1911 . . .	12,048,726	441,426	31,686	92,692	124,603
1912 . . .	14,044,368	423,464	41,660	91,784	131,233
1913 . . .	15,486,318	637,391	43,650	71,259	138,540

APPENDIX I—*concld.*

Table No. 4.

The following table shows the amount of coal raised, the average number of persons working daily and the death-rates during the years 1904 to 1913 in respect of coal mines under the Indian Mines Act, 1901 :—

Year.	Amount of coal raised.	Average number of persons working daily below and above ground.	Number of deaths below and above ground.	Death-rates.	
				Per 1,000,000 tons raised.	Per 1,000 persons working daily below and above ground.
1904 . . .	7,561,338	82,002	55	7·27	·67
1905 . . .	7,770,471	79,506	58	7·46	·72
1906 . . .	9,112,663	90,159	80	8·78	·89
1907 . . .	10,526,468	102,689	89	8·45	·86
1908 . .	12,149,020	120,107	164	13·49	1·36
1909 . . .	11,294,227	109,291	119	10·53	1·08
1910 . . .	11,387,716	105,285	160	14·05	1·52
1911 . . .	12,048,726	106,598	148	12·28	1·38
1912 . . .	14,044,368	121,392	157	11·17	1·29
1913 . . .	15,486,318	133,042	c 185	11·95	1·39

Table No. 5.

Statement showing the output of coal, the number of persons employed and the number of tons of coal raised per person employed in and about the coal mines of the principal coal-producing countries of the world :—

Year.	Country.	Tons of coal raised.	Persons employed.	Tons raised per person employed.
1912	United Kingdom . . .	260,398,578	1,089,090	239
1911	United States	443,054,614	722,335	613
,,	Germany	230,817,206	700,874	329
,,	Austria-Hungary . . .	48,314,562	159,988	302
,,	France	38,604,091	200,212	193
,,	Belgium	22,689,430	144,350	157
,,	Nova Scotia	6,208,444	12,522	496
,,	British Columbia . . .	2,297,718	6,873	334
,,	Australia	10,550,127	21,663	487
,,	Natal	2,392,456	9,824	244
,,	Transvaal	3,878,286	8,830	439
,,	Japan	17,354,217	145,412	119
,,	New Zealand	2,066,073	4,290	482
1909	Russia	26,822,120	169,079	159
		1,115,447,922	3,395,342	329
1913	**British India . . .**	**15,486,318**	**133,042**	**116**

APPENDIX II.

ACCIDENTS IN MINES.

Table No. 1.

List of Fatal Accidents in mines regulated by the Indian Mines Act, 1901, during the year 1913.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			EXPLOSIONS OF FIRE DAMP—(*29 deaths*).			
1	10th May, 5-30 P.M.	Saltore Mine, Dishargarh P. O., Bengal.	Saltore Coal Co., Ld.	Booku Manjhi, (*m.*), 40, *Miner.*	Coal	A contractor fired some shots first in the roof and then in the sides of a level. When the side shots were fired, some gas was ignited and deceased, who was 163 feet away, was burnt. He died two days afterwards. Another person was also burnt, but recovered. The contractor who was not authorised to fire shots, was fined and dismissed. Inspection and inquiry made. *See Report, page 6.*
2	29th July, 7-30 A.M.	Jamadoba Mine, Jamadoba P. O., Bihar and Orissa.	Indian Collieries Syndicate, Ld.	Behari Singh, (*m.*), 26, *Main driver.*	Coal	Deceased and another main gallery driver went down the mine to start work in a main gallery on a Tuesday morning after the place had been stopped since the previous Friday. They went down before an official had been round to inspect the place. Some gas had accumulated and was set alight by the candle of deceased who went in first. He was burnt and died the same evening. His companion, who sat down at the mouth of the heading, was not burnt being protected by a heap of slack at the mouth of the gallery. Inspection and inquiry made. *See Report, page 7.*
3	22nd October, 5-30 P.M.	Chowrasi Mine, Dishargarh P. O., Bengal.	Equitable Coal Co., Ld.	Kamal Manjhi, (*m.*), 35, Hupa Manjhi, (*m.*), 16, Bejoy Manjhi, (*m.*), 32, Lakhan Manjhi, (*m.*), 30, Rakhal Bauri, (*m.*), 35, Moti Bauri, (*m.*), 25, Bonamali Bauri, (*m.*), 25, Baikanta Bauri, No. 1, (*m.*), 44, Makunda Bauri, No. 1, (*m.*), 42, Makunda Bauri, No. 2, (*m.*), 20, Baikanta Bauri, No. 2, (*m.*), 45, *Miners.* Phula Manjhian, (*f.*), 12, Rani Manjhian, (*f.*), 26, Tusua Manjhian, (*f.*), 24, Kumi Baurin, (*f.*), 24, Heli Baurin, (*f.*), 20, *Miners kamins.* Biji Baurin, (*f.*), 40,	Coal	Smoke was found to be coming out of an incline and some coolies rushed out and said there was a fire underground. Two hours and a half afterwards a violent explosion occurred, which proved to be the first of a series of seven, gradually lessening in intensity. Three persons were killed on the surface by the first explosion, and the remaining deceased were subsequently found to be missing. They probably were suffocated before the first explosion occurred. Their bodies were not recovered as the mine had to be closed down. Inquiry made. *See Report, page 8.*

Fatal Accidents, 1913—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			EXPLOSIONS OF FIRE DAMP—(*contd.*)			
				Kudi Baurin, (*f.*), 40, *Dust kamins.* Bandhu Singh, (*m.*), 24, Sambhu Mahato, (*m.*), 26, *Hookmen.* Kirti Sakhal, (*m.*), 30, Sujat Sheik, (*m.*), 30, *Miners' sirdars.* Binda Sirdar, (*m.*), 35. *Compass sirdar.* Jaduba Dhobi, (*m.*), 17, *Compass carrier.* Taru Bauri, (*m.*), 60, *Rajmistri.* Sewri Bauri, (*m.*), 12, *Not employed.* Falari Hari, (*m.*), 30, *Private servant.*		
			FALLS OF ROOF AND SIDES—(*78 deaths*).			
			(*a*) **Falls of roof**—(*41 deaths*).			
4	18th January, 3 A.M.	Sanctoria Mine, Dishargarh P. O., Bengal.	Bengal Coal Co., Ld.	Etwari Muchi, (*m.*), 25, *Miner.*	Coal	Deceased was working at a pillar when a piece of overhanging roof consisting of stone and coal, 19′ long by 5′ 6″ to 0″ wide by 4′ 10″ thick, which was supported vertically on props, came away suddenly from a slip in the stone. In rushing out he was caught by the fall and killed on the spot. This long piece of roof required to be supported by diagonal struts as well as by vertical props. Inspection and inquiry made.
5	5th February, 4 P.M.	Bhulanbarari Mine, Jharia P. O., Bihar and Orissa.	Bhulanbarari Coal Co., Ld.	Hiru Hari, (*m.*), 38, Gundu Hari, (*m.*), 35, Dirup Hari, (*m.*), 36, *Miners.* Ahollaya Harini, (*f.*), 28, *Kamin.*	Coal	The four deceased were put to cut coal roof. They passed inbye under this roof coal, over a fence, and sat down to rest, when a fall of roof, about 5 tons, occurred, falling from a height of about 10 feet, killing them instantaneously. Inspection and inquiry made.
6	5th February, 4 P.M.	Davispur Mine, Duki P. O., Baluchistan.	K. S. Abdulla Asgarali	Fatteh, (*m.*), 40, *Labourer.*	Coal	A large fall of roof occurred completely burying deceased. His body could not be recovered.

7	27th February, 2 P.M.	Kessabganj Mine, Kalipahari P. O., Bengal.	Ganpat Ram Marwari .	Ramsi Manjhian, (*f.*), 27, *Kamin.*	Coal .	Deceased went into old workings where she had no business to be and was caught by a fall of roof coal, about 3 0 feet square by 15 inches thick, and killed. Two men were injured while attemping to rescue her. Inspection and inquiry made.
8	2nd March, 7 A.M.	Barkui Mine, Pench P. O., Central Provinces.	Pench Valley Coal Co., Ld.	Maindar Gond, (*m.*), 35, *Miner.* Hira Murai, (*m.*), 26, Bhagwanta Dhimir, (*m.*), 45, Dalli Ragbansi, (*m.*), 30, Jogi Gond, (*m.*), 30, *Coal fillers.* Pooran Katia, (*m.*), 26, *Tub banksman.*	Coal .	The first three deceased climbed up over the fallen roof in a goaf area presumably to get some fallen roof coal, and were caught by a heavy roof fall. The others with the sirdar rushed in to try and extricate them and were in their turn caught by a further heavy fall and killed. Only one man named Fagu Gond got out alive and he was injured. Inspection and inquiry made.
9	7th March, 12-30 P.M.	Ledo Valley, West Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Harkabahadur Thapa, (*m.*), 30, *Basket carrier.*	Coal . .	Deceased was loading coal from a "chamber" when the roof began to weight. The sirdar shouted a warning and all persons except deceased were able to run into safety before the place collapsed. The chamber measured 30′ × 24′ × 11′ high before the collapse, which increased the height to 20 feet. The body of deceased was recovered three days later. Inquiry made.
10	15th March, 9-30 P.M.	Bhaga Mine, Jharia P. O., Bihar and Orissa.	Jharia Colliery Co., Ld.	Basi Manjhian, (*f.*), 13, *Coal carrier.*	Coal . .	Deceased was loading a coal basket at a point where an intermediate band of unworked coal left between an upper and lower working in the same seam was being got when a mass of coal, 3′ 6″ × 3′ × 2′, fell upon her from a height of 7′ 6″. She was killed on the spot. Inspection and inquiry made.
11	28th March, 2 P.M.	Mudidih Mine, Sijua P. O., Bihar and Orissa.	Reliance Coal Co., Ld.	Koda Meah, (*m.*), 45, *Miner.*	Coal . .	Deceased went into a goaf presumably to rob coal and was caught by a large fall of the main roof, the ground collapsing over an area measuring 100′ × 70′. His body was not recovered. Inspection and inquiry made.
12	15th April, 7-30 A.M.	Pahargora Mine, Panuria P. O., Bengal.	F. W. Heilgers and Bros.	Mouzi Turi, (*m.*), 32, *Miners' sirdar.*	Coal . .	Deceased who was a gang sirdar went through a place fenced off on account of weak roof, probably with the object of seeing if he could not take the fencing down and start his miners, but the roof fell suddenly over an area 17′ × 6′ × 2′ 4″ causing injuries to his spine from which he died two days afterwards. Inspection and inquiry made.
13	23rd April, 10 A.M.	Dandot Mine, Dandot P. O., Panjab.	Thakur Das and Ramji Das.	Bukhsh, (*m.*), 5 , *Miner.*	Coal . .	Deceased, with his son, was hewing some overhanging roof coal when a piece of stone, measuring 2′ 6″ × 1′ 9″ × 9″ to 1′ 2″, fell from the roof knocking out a prop and lid. This was followed by other small pieces of stone with the result that deceased was entrapped and buried between the prop and a chock. He succumbed in four hours owing to internal injuries. The son was slightly injured.
14	26th April, 4-30 A.M.	Simlabahal Mine, Jharia P. O., Bihar and Orissa.	Bhalgora Coal Co., Ld.	Lachman Bilaspuri, (*m.*) 25, *Miner.*	Coal . .	Deceased was dressing down some overhanging coal from the side of a pillar, when a fall of roof, 13′ × 11′ × 2′ to 0″, occurred from a concealed slip in the roof. Two posts were dislodged, and the chair on which he was working was overturned. He was buried beneath the fall and killed. Inspection and inquiry made.
15	5th May, 1 P.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Dalmon Gorung, (*m.*), 28, *Basket filler.*	Coal . .	Deceased, whilst loading coal in a "chamber", 60′ × 15′ × 8′ high, was killed on the spot by the fall of a ton of coal from the roof. The place had been properly inspected and tested, but the coal fell without warning. Death due to misadventure. Inquiry made.

Fatal Accidents, 1913—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*contd.*			
			(*a*) **Falls of roof**—*contd.*			
16	20th June, 10-30 A.M.	Ledo Valley, West Mine, Margherita P. O., Assam.	Assam Railways & Trading Co., Ld.	Champa Ghatwal, (*f.*), 26, *Coal thanner.*	Coal	Whilst deceased and two other women were shovelling coal down a narrow dip road between a "chamber" and the tram level below, a slab of coal, 7′ long ×3′ wide and 1′ thick, fell from a "slip." Deceased was killed on the spot. The other women escaped with slight injuries. Inquiry made.
17	(About) 15th July, 1 P.M.	Maharamnagar Mine, Pahapalpur P. O., Delhi.	Lakhiya Julaha	Aladdin Sheik, (*m.*), 22, *Miner.*	Clay	About 2 tons of earth fell from the roof and buried deceased and killed him. There was only about 8 ft. of cover and it was the surface soil which fell. Inspection and inquiry made.
18	22nd August, 5 A.M.	Panchgatchia Mine, Sitarampur P. O., Bengal.	Lutchipur Coal Co., Ld.	Sander Manjhi, (*m.*), 37, *Miner.*	Coal	Deceased was cutting down roof coal, 15″ thick, in a gallery 15′ wide and 7′ 6″ high, when a piece of coal at which he was working, measuring 2′ 6″×2′× 1′ 3″, fell and fractured one of his ribs, from the effects of which he died two days later. Inspection and inquiry made.
19	27th August, 3 P.M.	Budruchak Mine, Sijua P. O., Bihar and Orissa.	Budruchak Coal Mining Co., Ld.	Rupar Manjhi, (*m.*), 38, *Head sirdar.*	Coal	Deceased, who was the head sirdar, was engaged with timber men in knocking out props in a pillaring area. After knocking out two props the roof showed signs of coming down and they retreated, but deceased went back to inspect. The roof suddenly came down over an area 40′×40′ swaying out 60 or 70 props and he was entombed. There was only 45 ft. of cover and the main roof must have been very unsound. Inspection and inquiry made.
20	4th September, 3-30 A.M.	Mudidih Mine, Sijua P. O., Bihar and Orissa.	Reliance Coal Co., Ld.	Sahadeb Kol, (*m.*), 22, *Miner.*	Coal	A fall of roof, 12′×6′×1′ 6″, occurred suddenly in a dip and rise gallery, close to the working place of deceased and his mate. According to the latter, who survived, they were walking out when it occurred, but there was a strong suspicion that they had been tampering with the roof by cutting roof coal. Deceased died by suffocation before he could be rescued. Inspection and inquiry made.
21	11th September, 10 A.M.	Huntodih Mine, Mohoda P. O., Bihar and Orissa.	Huntodih Coal Co., Ld.	Rupan Mahato, (*m.*), 36, *Coolie.*	Coal	While a Tangye duplex 12″×6″ pump was being lowered down the incline it broke loose and slid on skids about 40 yards, knocking out some timber; this caused a roof fall, 12′×12′×2′, to fall on top of deceased. He died from his injuries five days later. Inspection and inquiry made.
22	17th September, 10 A.M.	Madhuband Mine, Nowagarh P. O., Bihar and Orissa.	Jumoni Coal Co., Ld.	Bhima Singh, (*m.*), 22, *Bailer.*	Coal	Deceased was caught by a fall of roof, 6′×6′×6″, under which he and two other men were sitting. Deceased died of his injuries on the third day. The other two men were injured. Inspection and inquiry made.
23	21st October,	North Anantapur Mine,	North Anantapur Gold	Rangappak, (*m.*), 33,	Gold	The roof of an underhand stope fell suddenly over an area of about 80′×45′×7½′

	4-30 A.M.	Morriston P. O., Madras.	Mines, Ld.	*Stuff coolie.* Chikanna, (*m.*), 30, *Blaster.* Narappa, (*m.*), 38, Lalu, (*m.*), 20, Obelasu, (*m.*), 30, Muthial Gadu, (*m.*), 38, Chitty Gowda, (*m.*), 35, *Stuff coolies.*		thick. The ground was of a mixed nature which probably accounted for the sudden way it fell without any warning: about 2,000 tons fell burying deceased. The bodies were recovered with great difficulty. Inspection and inquiry made.
24	25th October, 7 A.M.	Bhagaband Mine, Jharia P. O., Bihar and Orissa.	Borrea Coal Co., Ld.	Jagan Bhuia, (*m.*), 35, *Miner.*	Coal	Deceased was killed outright by a pane of roof stone, measuring 8′×4×18″ thick tapering to an edge, which fell from between two "slips" in a roadway 7 feet high. Two props were swayed out, but whether they were actually under the stone or not cannot be ascertained. The man was either travelling along the road or sitting at the spot. Inspection and inquiry made.
25	5th November, 12 Midnight.	Madhubpur Mine, Ondal P. O., Bengal.	Imperial Coal Co., Ld.	Lakhan Kora, (*m.*), 30, *Coal-cutter.*	Coal	Deceased, after driving a wedge into a piece of roof-coal to get it down, sat down to smoke when the piece which was 8′×3′×6″, fell close to him and a portion struck him on the chest. He died within an hour from internal hæmorrhage. Inspection and inquiry made.
26	21st November, 2 A.M.	Kendwadih Mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Chintamon Chamar, (*m.*), 50, *Coal-cutter.*	Coal	Deceased was warned by the sirdar not to work at a certain place in the pillar workings, but returned, unknown to the latter, and was killed on the spot by a fall of coal weighing 1 cwt. which fell from a height of 13 feet. Inspection and inquiry made.
27	24th November, 12-30 P.M.	Jamuria Mine, Nandi P. O., Bengal.	Equitable Coal Co., Ld.	Joton Bauri, (*m.*), 19, *Line-coolie.*	Coal	A piece of roof-stone, 6′×6′×1′, exposed at a cross road, fell on deceased as he was passing underneath and fractured his thigh and dislocated his hip joint. He died shortly afterwards from internal hæmorrhage and shock. Inspection and inquiry made.
28	9th December, 2 P.M.	New Khas Jharia Mine, Jharia P. O., Bihar and Orissa.	Ramjus Agarwala	Tara Manjhi, (*m.*), 38, *Coal-cutter.*	Coal	Deceased was engaged in a level gallery driven off the east side of a dip gallery. The level gallery had been driven about 2 feet in. A sudden fall of roof, 29′×7′×2′, occurred, falling from a height of 11 feet. Deceased was killed on the spot. A woman was injured. Inspection and inquiry made.
29	26th December, 1-30 P.M.	West Kantapahari Mine, Katrasgarh P. O., Bihar and Orissa.	Angarpatra Colliery Co., Ld.	Kailu Turi, (*m.*), 25, *Miner.*	Coal	Whilst deceased was robbing coal from the side of the gallery in which he worked, roof stone, measuring from 2″ to 10″ in thickness, fell over an area of 50 square feet. He was killed on the spot. Inspection and inquiry made.
30	30th December, 3 P.M.	Lakorka Mine, Katrasgarh P. O., Bihar and Orissa.	Lakorka Coal Co., Ld.	Sukhamani Manjhian, (*f.*), 33, *Coal-carrier.*	Coal	Deceased was employed as a coal carrier to a coal cutter working on roof coal. Whilst she was loading coal at the working place a piece of coal, weighing about 1 cwt., fell from the roof at a height of 7 feet and inflicted injuries from which she died twelve hours later. Inspection and inquiry made.
			(*b*) Falls of side—(*37 deaths.*)			
31	3rd January, 11 A.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway	Ahmad Ali, (*m.*), 21, *Carpenters' coolie.*	Coal	While deceased was assisting the carpenter to set a prop a fall of coal occurred, which resulted in the fracture of his left thigh. He was taken to hospital and at first made satisfactory progress, but becoming impatient he opened the bandages and re-opened the wound which did not heal again; he was also suffering from dysentery and died six weeks after the accident. Inspection and inquiry made.

Fatal Accidents, 1913—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			FALLS OF ROOF AND SIDES—*contd.*			
			(*b*) **Falls of side**—*contd.*			
32	10th January, 9 A.M.	Gumgaon Mine, Ramtek P. O., Central Provinces.	Central Provinces Prospecting Syndicate, Ld.	Seetaram Lodhi, (*m.*), 30, *Miner.*	Manganese	Deceased was working on an old waste dump getting ore when the whole side for a length of 22 feet × 10 feet high × 4 to 5 feet wide, fell on him and buried him. He was dead when recovered an hour later. He had been warned about undercutting the day before, but was in all probability doing this at the time. Inspection and inquiry made.
33	16th January, 10-30 A.M.	Charanpur Mine, Charanpur P. O., Bengal.	Apcar & Co. . . .	Goohia Muchi, (*m.*), 30, *Coal-cutter.*	Coal	Deceased was trying to get a piece of coal off a pillar in a pillar district when the piece fell suddenly and broke his leg. The piece measured 5′×6′×3′ and fell from a height of 5 feet from the ground. He died about six hours afterwards from shock. Inspection and inquiry made.
34	28th January, 10 A.M.	Barari Mine, Kustore P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Pabina Dhobin, (*f.*), 22, *Coal-carrier.*	Coal .	A portion of the side coal of a gallery, 28 feet long by 10 feet high by 3 feet 6 inches to 0″ thick, suddenly fell without warning, killing deceased, who was standing in the gallery, outright. The gallery was 11 feet high. Inspection and inquiry made.
35	10th February, 3 P.M.	Tikaria Plot, No. 17 Mine, Murwara P. O., Central Provinces.	Seth Ram Chand . .	Santi Kol, (*f.*), 9, *Kamin.*	Limestone .	Deceased was carrying out spoil in an excavation when the bank on one side fell and in trying to get out of the way she slipped and was caught by the earth which fell, measuring about 15′×5′×8′; she was buried up to her waist and her leg was severed above the knee by a sharp piece of limestone. She died of shock in hospital seven hours later. Inspection and inquiry made.
36	21st February, 2-30 P.M.	Toposi Mine, Chowkidanga P. O., Bengal.	Bansrah Coal Co., Ld. .	Katuri Baurin, (*f.*), 13, *Coal kamin.*	Coal	Some miners, when taking a slice off a pillar, left an overhanging piece which was dangerous. Deceased and other kamins, though warned not to go to this place, went there and deceased was caught by a piece, measuring 1′ 3″ × 1′×1′, which fell on her. She died from shock. Inspection and inquiry made.
37	17th March, 10 A.M.	Bhuggutdih Mine, Dhanbaid P. O., Bihar and Orissa.	Bengal-Nagpur Coal Co., Ld.	Sriram Manjhi, (*m.*), 30, *Coal-cutter.*	Coal .	A piece of coal 16′ high × 6′×2′ fell off the side of a pillar which was being worked and knocked out three props, one of which hit deceased on the head, while he was sitting 18 feet away, killing him instantaneously. Inspection and inquiry made.
38	18th March, 2-30 P.M.	Balaghat Mine, Kamptee P. O., Central Provinces.	Central Provinces Prospecting Syndicate, Ld.	Binglu Marar, (*m.*), 19, *Rocker-worker.*	Manganese	As deceased was boring a hole, a piece of stone, 10′×5′×3′, fell from a step just above him, and hit his head and side, killing him instantaneously. Inspection and inquiry made.
39	21st March, 3 A.M.	Bhaga Mine, Jharia P. O., Bihar and Orissa.	Jharia Colliery Co., Ld.	Seopal Koiril, (*m.*), 30, *Miner.*	Coal .	A piece of coal, measuring 1′ 6″×1′×6″, fell about 20 feet from the top of a pillar, the side of which was being dressed, and struck deceased between the shoulders as he was stooping to pick up some fallen coal. He expired almost immediately. Inspection and inquiry made.

40	22nd April, 11 P.M.	Ledo Valley, Old West Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Mahnoo Passi, (*m.*), 30, *Coal shoveller.*	Coal	Whilst coal was being cut from the top rib in a "chamber", deceased stood 12 feet below and was killed by the fall of a mass of some 25 cwts. of coal which fell away from a "slip". Death was due to carelessness on the part of the deceased and the subordinate official in charge. Inspection and inquiry made.
41	7th May, 8-30 A.M.	Ledo Valley, Old West Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Madhu Lal Sonar, (*m.*), 35, "*Chamber*" *man.*	Coal	Deceased was in a highly inclined "chamber," the upper part of which was full of loose coal. The manager himself instructed him how to make the coal "run" by standing in a bolt hole and undermining the loose coal with a long crowbar. On returning a few minutes later the manager found the lower part of the "chamber" full of coal, and no sign of deceased. His voice could be heard for some time, but life was extinct when his body was recovered, standing against the side of and 6 feet within the "chamber", two hours later. Death was due to disobedience of orders. Inspection and inquiry made.
42	15th May, 10-30 A.M.	Sitanala Mine, Bhujudih P. O., Bihar and Orissa.	P. N. Roy and Co.	Kalpa Bauri, (*m.*), 23, *Coal carrier.*	Coal	Deceased went, presumably over a fence, and sat down at one end of the quarry, when about half a ton of coal and earth fell on him, injuring him so severely that he died in half an hour. Inspection and inquiry made.
43	17th May, 5-30 P.M.	Garbham Mine, Chipurupalli P. O., Madras.	Vizianagram Mining Co., Ld.	Yatha Bangarigadu, (*m.*), 30, Kondru Rami, (*f.*), 20, *Coolies.*	Manganese	While deceased and other coolies were piling their tools under a bank, preparatory to going to take shelter from a storm, the sides slipped and about two tons fell burying deceased and partially burying three children also—the latter were extricated without any serious injury but when deceased were got out they had been asphyxiated. Inspection and inquiry made.
44	20th May, 10 A.M.	Pagaye Mine, Tavoy P. O., Lower Burma.	Rangoon Mining Co., Ld.	Ah Saing, (*m.*), 30, *Miner.*	Wolfram	Deceased was undercutting a face of overburden about 15 feet high when a fall of about 10 tons of earth fell and buried him. He was killed on the spot. Two days before the manager had warned him not to work there until he had removed the overhanging portion. Inquiry made.
45	17th June, 5 P.M.	Putletto Mine, Tavoy P. O., Lower Burma.	Khoo Jin Teik	Lim Kie Pok, (*m.*), 37, *Mining coolie.*	Wolfram	Whilst working in an open cut the deceased was buried by the fall of overburden from one of the walls of the cut. Probably about two tons fell from a height of about 15 feet. Inquiry made.
46	21st June, 11 A.M.	Dheriajoba Mine, Kusunda P. O., Bihar and Orissa.	Dheriajoba Coal Co., Ld.	Larua Kaharin, (*f.*), 14, *Earth kamin.*	Coal	Deceased, Larua Kaharin, was carrying a load of earth out of the incline, the sides of which were being dressed to put in side walls for arching, when about 3 tons of earth from the side fell and buried her and two children who accompanied her, but who were not employed. All three were killed. The side which fell was composed of burnt shale and clay and should have been dressed back instead of being left vertical. Inspection and inquiry made.
47	14th July, 11 A.M.	Salanpur Mine, Sitarampur P. O., Bengal.	Borrea Coal Co., Ld.	Sagram Manjhi, (*m.*), 24, *Coal-cutter.*	Coal	Deceased deliberately went through a fence to rob an old stook of coal and was caught by an overhanging piece, weighing about three tons, which fell directly he struck it. He was killed instantaneously. Inspection and inquiry made.
48	15th July, 10 A.M.	Burragarh Mine, Jharia P. O., Bihar and Orissa.	Panjab-Bengal Coal Co., Ld.	Matilal Bauri, (*m.*), 30, *Coal-cutter.*	Coal	Deceased, though twice warned away from the place by officials, returned to a corner of a pillar to cut it, when about one ton fell on him and fractured his left leg severely. He was sent to Dhanbaid Hospital to have the leg amputated, but died from shock on the way. Inspection and inquiry made.
49	14th August, 9 A.M.	North Anantapur Mine, Morriston P. O., Madras.	North Anantapur Gold Mines, Ld.	Karriapa, (*m.*), 40, *Stope mistri.*	Gold	Deceased was getting down a piece of loose ground in a stope at the top of a winze when it came away and he was knocked down the winze, a distance of 60 feet. Inspection and inquiry made.

Fatal Accidents, 1913—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
		FALLS OF ROOF AND SIDES—*contd.*				
		(*b*) **Falls of side**—*contd.*				
50	15th August, 7 A.M.	Jamadoba Mine, Jamadoba P. O., Bihar and Orissa.	Indian Collieries Syndicate, Ld.	Ram Charan Dosadh, (*m.*), 40, *Sirdar.*	Coal . .	While deceased was making chalk marks on the coal face in the course of his morning round, about one ton of coal fell off a "slip" and crushed him so severely about the body that he was killed instantaneously. The "slips" which are vertical occur with great regularity 20 to 24 inches apart and the coal was not spragged. Inspection and inquiry made.
51	26th August, 6-30 A.M.	Jamadoba Mine, Jamadoba P. O., Bihar and Orissa.	Indian Collieries Syndicate, Ld.	Boiya Mahato, (*m.*), 26, *Miner.*	Coal . .	Deceased deliberately crossed a fence to get some coal that had fallen in a goaf when another piece, weighing about 1½ cwts. fell from the corner of a pillar on to him. His arm and head were injured and he died from shock and loss of blood two hours afterwards. Inspection and inquiry made.
52	26th August, 12-15 P.M.	Barari Mine, Kustore P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Aguni Jolahin, (*f.*), 24, Sohiday Jolahin, (*f.*), 14, *Coal-carriers.*	Coal . .	The deceased were loading from a pillar that had been dropped when about 1½ tons of coal slipped from the portion of the pillar left standing, as a guide to the state of the roof, and killed them both. Inspection and inquiry made.
53	27th August, 6 A.M.	Bhuggutdih Mine, Dhanbaid P. O., Bihar and Orissa.	Bengal Nagpur Coal Co., Ld.	Dhoni Meah, (*m.*), 35, *Coal-cutter.*	Coal . .	Deceased left his working place and crossed a fence to rob coal in another place. A fall of two tons of coal came away from an inverted cleat in the coal, and killed him instantaneously. Inspection and inquiry made.
54	18th October, Unknown (night).	Kendwadih Mine, Nowagarh P. O., Bihar and Orissa.	Chamanlal Mangaldas and Co.	Chamu Garai, (*m.*), 42, *Miner.*	Coal . .	Deceased broke down a fence and entered some old workings to rob a pillar. His body was found buried beneath a fall of about 12 tons of side coal. Inspection and inquiry made.
55	24th October, 9 A.M.	Tikak, Upper Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Tikaram Thapa, (*m.*), 18, *Coal-carrier.*	Coal . .	Deceased was employed as a coal loader in a "chamber" 40′×20′× 7′—18′ high. The roof began to weight and the head sirdar, Bhikom, ordered every one out. Deceased stood with Bhikom and two other men at the entrance to a "bolt-hole" to await developments. Without warning a mass of 6⅓ tons of coal fell from the side and roof over the "bolt-hole". Deceased was killed on the spot and Bhikom was buried by the coal but escaped with a few bruises. The coal fell from concealed "slips" through which water from the outcrop was percolating. Inquiry made.
56	25th October, 11-30 A.M.	Brindabanpur Model Mine, Mugma P. O., Bihar and Orissa.	P. C. Tarafdar . .	Mathur Bauri, (*m.*), 25, *Miner.*	Coal . .	A heavy fall of coal occurred in some old workings which were properly fenced. Miners at once rushed to the place, and discovered deceased beneath the fall. His pick and basket were by his side, so it is presumed that he had started to rob a pillar. He had been seen in his proper working place by the manager an hour before. The coal which fell measured 9′×5′ 4″ × 4′ 6″ and it fell a distance of 7′ 6″. Inspection and inquiry made.

57	4th November, 9-30 P.M.	Bhulanbarari Mine, Jharia P. O., Bihar and Orissa.	Bhulanbarari Coal Co., Ld.	Joshi Dhobi, (*m.*), 42, *Miner.*	Coal .	Deceased was found buried beneath about seven tons of coal which had fallen from the corner of a pillar in some disused and fenced workings. It is surmised that he had been robbing the pillar. He died from his injuries two hours later. Inspection and inquiry made.
58	7th November, 1 P.M.	Kyaukmedaung Mine, Tavoy P. O., Lower Burma.	S. Crawshaw and Qah Cheng Guan.	Chang Hong, (*m.*), 28, *Miner.*	Wolfram .	Deceased, whilst working in an open cut, was buried by the fall of loose ground from the side which was only 9 feet high. Inquiry made.
59	8th November, Midnight.	Kesalpur Mine, Katrasgarh P. O., Bihar and Orissa.	R. M. Pal and Brothers .	Phutia Kamarin, (*f.*), 14, *Slack-carrier.*	Coal . .	Deceased entered a gallery under repair. She was ordered to leave the place, but refused. A pane of coal, measuring 10′ × 6′ 6″ × 2′ 6″ at the thick end tapering to a feather edge at the other, fell from the side without warning and killed her outright. A sirdar was dismissed and a roof dresser was fined. Inspection and inquiry made. *See Report, page 10.*
60	11th November. 5 A.M.	Jamadoba Mine, Jamadoba P. O., Bihar and Orissa.	Indian Collieries Syndicate, Ld.	Fagu Meah, (*m.*), 30, *Coal-cutter.*	Coal . .	All the miners had been removed from a goaf on account of weighting and a fence had been erected. Subsequently the sirdar went through the fence to see if timber could be saved and he was closely followed by deceased who, contrary to orders, went in to try to get some coal to complete his tub. He picked up some pieces which he placed beyond the fence and then returned to get more when a fall of coal occurred and he was killed on the spot. Inspection and inquiry made.
61	19th November, 4 P.M.	Hpaungdow Mine, Tavoy P. O., Lower Burma.	Liebaoak Syndicate .	How Shein, (*m.*), 42, *Coolie.*	Wolfram .	Whilst working in an open cut the deceased was buried by the fall of about two tons of earth from the side. Inquiry made.
62	28th November, 1-30 A.M.	Bhaga Mine, Jharia P. O., Bihar and Orissa.	Jharia Colliery Co., Ld.	Thakee Passi, (*m.*), 40, *Sirdar.*	Coal . .	Deceased was in charge of a gang of miners who were loading coal from a dropped pillar on the edge of the goaf. Coal began to roll down from the fallen heap and he sent the miners back and remained to watch developments. Two large irregular lumps, weighing about 30 and 10 cwts., respectively, rolled down from the heap and knocked out a prop 8′ 6″ in length. This prop struck him and he sustained injuries from which he died shortly afterwards. Inspection and inquiry made.
63	19th December, 8-30 A.M.	Ledo Valley, West Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Tilok Bahadur, (*m.*), 22, *Thanning coolie.*	Coal . .	Deceased was shovelling coal in a "chamber", 30′×18′×20′ high, which had been examined about half an hour before and found safe by the European foreman. About 7 cwts. of coal fell from the side and struck him, inflicting injuries from which he died before he reached hospital. Inspection and inquiry made.
64	27th December, 9 P.M.	Bhulanbarari Mine, Jharia P. O., Bihar and Orissa.	Bhulanbarari Coal Co., Ld.	Kita Bauri, (*m.*), 35, *Miner.*	Coal . .	Deceased worked in an area of pillars in a thick seam where working in two stages had been carried on. He and a special gang of miners were employed in removing the partition of coal, 2′ to 6′ thick, between the two stages. The place was 25 feet high and from 25 to 48 feet wide. Owing to overhanging coal it became unsafe on the day shift, and the European Assistant withdrew the miners and erected fences. The deceased went through the fence and began to get coal from the corner of a pillar. He was killed by the fall of a mass of some three tons of coal from a height of 15 feet. A sirdar's pole, a ladder and a crowbar were found at the spot. Inspection and inquiry made.
65	29th December, 10 A.M.	Kuldiha Mine, Giridih P. O., Bihar and Orissa.	Bengal Coal Co., Ld.	Ramjit Rajwar, (*m.*), 31, *Miner.*	Coal . .	A piece of coal, measuring 16′×6′×2′ 6″ thick, fell from an undisclosed "*slip*" in the side of a pillar near a goaf in which deceased and three others were loading up loose coal and struck deceased on the back killing him outright. The side was overhanging to an angle of 69°. Inspection and inquiry made.

Fatal Accidents, 1913—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			IN SHAFTS—(*29 deaths*).			
			Overwinding—(*1 death*).			
66	10th January, 10 A.M.	Bhulanbarari Mine, Jharia P. O., Bihar and Orissa.	Bhulanbarari Coal Co., Ld.	Domon Mahato, (*m.*), 22, *Stone cutter.*	Coal . .	While an empty water barrel was at the top of the pit some unknown person, in the absence of the engineman, started the engine. The barrel was overwound, the bell of the safety hook was shattered by the concussion, and the barrel fell down the pit, killing deceased, who was standing on a pump staging in the shaft. Inspection and inquiry made.
			Ascending or descending by machinery—(*14 deaths*).			
67	8th February, 0-30 A.M.	Benahir Mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ld.	Subedar Khan, (*m.*), 25, *Pumpman.*	Coal . . .	Deceased went up the pit in the bucket and when almost halfway up signalled to stop. He then, from some unknown cause, fell to the bottom, about 120 feet down and was killed instantaneously. Inspection and inquiry made.
68	28th April, 8-30 A.M.	Loyabad Mine, Bansjora P. O., Bihar and Orissa.	Barakar Coal Co., Ld.	Jossai Korin, (*f.*), 45, *Dust kamin.*	Coal . .	Deceased was riding down for the first time in her life in a cage with two other kamins and when the cage was in the shaft it was stopped and deceased presumably thought the shaft bottom was reached and stepped out, falling down to the landing and being killed almost instantaneously. There were no gates or chains on the cage, nor did any of the occupants have any light. Inspection and inquiry made.
69	8th July, 5 P.M.	Charanpur Mine, Charanpur P. O., Bengal.	Reliance Coal Co., Ld.	Balir Manjhian (*f.*), 18, *Coal kamin.*	Coal . .	Deceased with her husband was riding up a pit, 187 feet in depth, when she fell out from about halfway up. It is not known how she happened to fall, but possibly she opened one of the safety chains with which the cage was fitted and which were said to have been fastened, and lost her balance. She was killed instantaneously. Inspection and inquiry made.
70	10th July, 2-30 P.M.	Chinchuria Mine, Asansol P. O., Bengal.	New Birbhum Coal Co., Ld.	Mahan Manjhi, (*m.*), 32, *Tramline coolie.*	Coal . .	Deceased got into the cage alone on the surface and while being lowered in the shaft, which was 420 feet deep, she fell out soon after leaving the pit bank. There was no evidence to show why she fell. The cage was not provided with chains or gates, though originally gates had been used. They had been discarded about twelve months ago by a former manager. Inspection and inquiry made.
71	18th August, 8 A.M.	Dishargarh Mine, Dishargarh P. O., Bengal.	Equitable Coal Co., Ld.	Udit Ahir, (*m.*), 50, *Plate layer.*	Coal . .	Deceased, while going down in the morning with five other men, fell out of the cage. The cage was fitted with safety bars, consisting of a cross bar of ½" square iron hinged at one end and with a hook at the other end and this was in position at the time. He had been suffering from fever and probably fainted in the cage and slipped under the bar which was 3′ 6″ off the floor of the cage. He was killed instantaneously. Inspection and inquiry made.

72	20th September, 5-30 P.M.	Bhulanbarari Mine, Jharia P. O., Bihar and Orissa.	Bhulanbarari Coal Co., Ld.	Bundia Korin, (*f.*), 15, *Dust kamin.*	Coal .	Deceased and three other kamins were being lowered down No. 1 pit when her cloth was caught by the descending pit top sliding gate and was pulled off her. She let go her hold of the cage and made a grab at her cloth, overbalanced and fell to the bottom of the shaft, some 290 feet, and was killed instantaneously. The cage was not provided with any sort of safety gate. Had it been so the accident could hardly have occurred. Inspection and inquiry made.
73	16th October, 5-30 P.M.	Kendwadih Mine, Jamadoba P. O., Bihar and Orissa.	Hariladih Coal Co., Ld.	Dukhit Panka, (*m.*), 38, *Sirdar.*	Coal .	Deceased was descending a shaft 215′ deep when 4 feet from the bottom he jumped out of the cage, slipped on the flat sheets (he was wearing boots), and fell backwards. Before he could rise the cage came to rest on his neck and he was killed outright. Inspection and inquiry made.
74	23rd October, 9 P.M.	Sodepur Nos. 9 and 10 Pits, Sitarampur P. O., Bengal.	Bengal Coal Co., Ld.	Chotton Dosadh, (*m.*), 30, Kuldip Dosadh, (*m.*), 38, *Main gallery drivers.* Kundan Manjhi, (*m.*), 25, Sagar Manjhi, (*m.*), 30, *Coal cutters.*	Coal .	Owing to a joint in the pump lodge at the 400′ level breaking the bottom pipe of a 6″ water column was forced out into the shaft and fouled the descending cage with five men in it. This threw the cage out of position and resulted in its collison with the descending cage. Three of the deceased were thrown out to the shaft bottom 456 feet below. Two other men were injured by being thrown against the side of the cage, but were not thrown out. One subsequently died of his injuries. Inspection and inquiry made.
75	17th December, 2-30 P.M.	Jibutil Mine, Morriston P. O., Madras.	Jibutil Gold Mines, Ld.	Patnam Murugese, (*m.*), 30, *Timber coolie.*	Gold .	There were no witnesses to this accident, but it was presumed that deceased signalled to hoist and then jumped into the skip whilst it was in motion. Riding in the skip was strictly prohibited and a notice to this effect was posted on the shaft head. Deceased must have been killed instantaneously his head being severed from his body.
76	24th December, 7 P.M.	Budruchak Mine, Sijua P. O., Bihar and Orissa.	Budruchak Coal Mining Co., Ld.	Sahado Dosadh, (*m.*), 35, *Coal cutter.*	Coal .	Whilst four persons were being lowered in the cage, the lugs of the front standards of the brake broke and the cage bumped violently at the bottom of the shaft. Deceased received injuries from which he died three hours later and three other men were severely injured. Inspection and inquiry made.
77	31st December, 8 A.M.	Srikristopur Mine, Kalipahari P. O., Bengal.	Baliram Coal Co.	Bhola Turi, (*m.*), 35, *Special pump khalasi.*	Coal .	Deceased was in the shaft oiling a pump. On signalling for steam to be shut off and for him to be raised the cage came up empty. He was afterwards found on the pump with his head smashed in. It is probable that owing to the steam escaping from a broken joint 6 or 7 feet above the pump he tried to get on to the side of the cage from the pump staging and fell off as he was being pulled up. Inspection and inquiry made.
		Falling into the shaft from the surface—(*1 death*).				
78	16th July, 11-30 A.M.	Loyabad Mine, Bansjora P.O., Bihar and Orissa.	Barakar Coal Co., Ld.	Behari Kurmi Mahato, (*m.*), 25, *Fitter-mistri.*	Coal .	A 12″×6″ Tangye pump was about to be lowered down the pit and was balanced on the wall of the inset. Deceased was on the pump loosening a rope. The pump by some means or other slipped off the inset wall and swung across the shaft and deceased was thrown to the shaft bottom, 200 feet below, and was killed instantaneously. The pump should have been secured before any one was allowed on to it. Inspection and inquiry made.
		Falling from part of the way down—(*3 deaths.*)				
79	27th July, 1 P.M.	Munsar Mine, Kamptee P. O., Central Provinces.	Central Provinces Prospecting Syndicate, Ld.	Dhamia Mahar, (*m.*), 16, *Coolie.*	Manganese .	Orders had been given to stop work at the bottom of the winze where a cross cut was being driven. All the men had accordingly come up and brought their tools out when deceased went down again presumably to fetch something. He did not take a light and seems to have fallen off the sollar at the 50′ level and into the sump 50′ below; he pulled himself out of the sump on to the sollar and shouted for help and was carried up but died two days after from internal injuries and shock. Inspection and inquiry made.

Fatal Accidents, 1913—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			IN SHAFTS—*contd.*			
			Falling from part of the way down—*contd.*			
80	5th October, 3 A.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway .	Noor Mahomed, (*m.*), 13, *Carpenter's coolie.*	Coal .	As deceased was getting into a train of tubs at a landing at the end of his shift, he slipped and fell between the edge of the landing and the train, a space of only 8 inches, and fell 180 feet down the incline which dips at 50°. He died immediately. Inspection and inquiry made.
81	16th October, 8-15 P.M.	Panchgatchia Mine, Sitarampur P. O., Bengal.	Lutchipur Coal Co., Ld. .	Jagat Singh, (*m.*), 27, *Head-tindel.*	Coal .	A balance weight and chain had become entangled with a water bucket in a shaft, at a depth of 200 feet. Deceased while endeavouring to set free the chain lost his balance and fell down between the bucket and the side of the shaft into water, 65 feet below. His body was recovered four days later. Inspection and inquiry made.
			Things falling from part of the way down—(*10 deaths*).			
82	20th April, 3 P.M.	Simlabahal Mine, Jharia P. O., Bihar and Orissa.	Bhalgora Coal Co., Ld. .	Meghu Gope, (*m.*), 25, *Sinker.*	Coal .	Two stones, about 1′×6″×3″, fell from a shale band 3½′ thick, at a distance from the pit bottom of 14 feet and struck deceased on the head, killing him outright. Another man was injured but recovered. The shale was very weak and should have been secured. Inspection and inquiry made.
83	10th June, 1-30 A.M.	Rakha Hills Mine, Rakha Mines P. O., Bihar and Orissa.	Cape Copper Co., Ld. .	Gobindswami, (*m.*), 28, *Machine-drill man.*	Copper .	The loaded skip came off the skipway at a depth of 294 feet and knocked out a hand rail between the ladder way and skip way. This hand rail, 15′ long×6″×1″, fell or slid down the ladder way, at an angle of 42°, right to the bottom of the shaft, 300 feet below, and struck deceased, who was working there, on the back of the head, killing him instantly. Inspection and inquiry made.
84	28th September, 4-30 P.M.	Sripur Mine, Kalipahari P. O., Bengal.	Lodna Colliery Co., Ld. .	Abdul Meah, (*m.*), 32, *Sinker.*	Coal .	Deceased was hit by a stone about a foot square and six inches thick, which fell somewhere from the side of a shaft, which was 850 feet deep. There was no particularly weak layer of strata. The strata were sound generally. Inspection and inquiry made.
85	15th November, 7-15 A.M.	Bhowra Mine, Jamadoba P. O., Bihar and Orissa.	Eastern Coal Co., Ld. .	Kari Meah, (*m.*), 25, Dowlat Meah, (*m.*), 25, Gurdoyal Singh, (*m.*), 35, *Bailers.*	Coal .	While five bailers were at work at the bottom of a shaft 326 feet deep a block of coal, measuring 8′×7′×6′ 6″, fell from a middle landing, situated 214′ from the surface. The greater portion of the coal fell down the shaft and killed the three deceased outright. Inspection and inquiry made. *See Report, page 10.*
86	9th December, 4 P.M.	Hariladih Mine, Jharia P. O., Bihar and Orissa.	Equitable Coal Co., Ld.	Kherku Kahar, (*m.*), 18, Namdin Khan, (*m.*), 25, *Tindel khalasi.*	Coal .	A column of loose flanged wrought iron pipes, 5″ in diameter, and about 100′ in length, was being raised under water, between a double line of buntons in a shaft by means of a rope attached to the top pipe and to a hand winch which was actuated by three men. This top pipe parted from the others

						and the column fell back, striking the two deceased, who were standing on the highest bunton in order to guide the pipe up, and throwing them into the water, 195′ deep, just below the bunton. Namdin Khan's body was recovered three days afterwards and Kherku Kahar's body was recovered five days afterwards. A pump man was also thrown into the water but was rescued. Inspection and inquiry made.
87	11th December, 2-30 P.M.	Balaghat Mine, Kamptee P. O., Central Provinces.	Central Provinces Prospecting Syn., Ld.	Brijlal Lodi, (*m.*), 35, *Shaft-worker.*	Manganese	While a bucket containing drills was being wound up a shaft it collided (probably with the descending bucket) and caught in the side. A small drill tipped out and fell to the bottom of the shaft and struck deceased in the back piercing his lung. He died from shock five days later. Inspection and inquiry made.
88	17th December, 9 P.M.	Sripur Mine, Kalipahari P. O., Bengal.	Lodna Colliery Co., Ld.	Ramu Kol, (*m.*), 28, *Sinker.*	Coal	A stone, 24″ × 16″ × 5″, fell somewhere from the side of a shaft which was 910 feet deep, and struck deceased on the head killing him instantly. A similar fatality had occurred at this shaft about two months previously. Inspection and inquiry made. *See Report, page 11.*
			SUFFOCATION BY GASES—(*1 death*).			
89	16th November, 4 P.M.	Sanctoria Mine, Dishargarh P. O., Bengal.	Bengal Coal Co., Ld.	Alumuddy, (*m.*), 13, *Pump-khalasi's assistant.*	Coal	A fire broke out in an old goaf into which it is presumed deceased penetrated having gone over a fence. He was gassed and died from the effect of carbon monoxide poisoning. The area was dammed off by walls, which had been damaged by fall of roof during the rains and a second line of stopping had been nearly completed. Inspection and inquiry made.
			EXPLOSIVES—(*2 deaths*).			
90	2nd March, 10 A.M.	Putletto Mine, Tavoy P. O., Lower Burma.	Kho Jin Teik, Tavoy P. O.	Ah Yan, (*m.*), 40, *Coolie.*	Wolfram	Deceased was head of a gang of three men who worked in an open cut. He appears to have attempted to pull out the fuse and detonator from a miss-fired charge of dynamite. Whilst doing so it exploded and blew off one of his hands. He died in hospital a month later. Inquiry made.
91	19th December, 9-30 A.M.	Budruchak Mine, Sijua P. O., Bihar and Orissa.	Budruchak Coal Mining Co., Ld.	Sital Passi, (*m.*), 33, *Shot-firer.*	Coal	Deceased was sitting alone near the mouth of an incline preparatory to going underground. He had in his possession 2½ pounds of country gunpowder, two sticks of dynamite and a detonator. By some means unknown an explosion occurred, and he received injuries to which he succumbed the same day. Inspection and inquiry made.
			IRRUPTIONS OF WATER OR FALLING INTO WATER—(*30 deaths*).			
92	28th June, 2 A.M.	Jotejanaki Mine, Chowkidanga P. O., Bengal.	Banerji Santan	Charu Manjhi, (*m.*), 16, *Miner.* Khepi Manjhian, (*f.*), 50, Alhadi Manjhian, (*f.*), 14, Rani Manjhian, (*f.*), 15, Hupni Manjhian, (*f.*), 16, Thelka Manjhian, (*f.*), 16, Takra Manjhian, (*f.*), 40, Sohagi Manjhian, (*f.*), 50, Joshi Manjhian, (*f.*), 14, Leghai Manjhian, (*f.*), 15, Khedu Manjhian, (*f.*), 14, Muni Manjhian, (*f.*), 36, Manki Manjhian, (*f.*), 35, *Kamins.*	Coal	Owing to an abnormal fall of rain which commenced about 10 P.M. and lasted for about five hours, during which time from 7 to 8 inches of rain fell, the water in a nullah flowing past the mine rose above the mouths of two inclines and completely flooded all the workings, drowning the thirteen deceased. The management declared that they were unaware that any one was underground that night. Inspection and inquiry made. *See Report, page 12.*

Fatal Accidents, 1913—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			IRRUPTIONS OF WATER OR FALLING INTO WATER—*contd.*			
93	21st July, 3 A.M.	Sikdardih Mine, Giridih P. O., Bihar and Orissa.	Bayra Coal Association .	Chaku Rai, (*m.*), 30, Bhola Rai, (*m.*), 20, *Pump khalasies.*	Coal .	Owing to a very heavy rainfall, nearly 7 inches, which fell in a few hours in the night, the flood level of the Sikli and Khaku nullahs rose to such a height that the water flowed down the mouth of the incline which was situated on the banks of the nullah and filled the mine. Deceased who were looking after the pump were caught below and drowned. Inspection and inquiry made.
94	7th August, 8 P.M.	Jamadoba Mine, Jamadoba P. O., Bihar and Orissa.	Indian Collieries Syndicate, Ld.	Moti Meah, (*m.*), —, Bishu Meah, (*m.*), —, Gorhali Meah, (*m.*), —, Mirju Meah, (*m.*), —, Milu Singh, (*m.*), —, Bhagu Roy, (*m.*), —, Laku Manjhi, (*m.*), —, *Main gallery drivers.*	Coal . .	After about four days of very heavy rain the water rose at the bottom of a shaft until it reached the mouth of the level in which deceased were working, and it was subsequently ascertained by levelling that their retreat was nearly cut off at 10 P.M., when all responsible officials including the manager left the mine. Some time during the night the water from a nullah broke into a main gallery and completely flooded large areas of the mine including this level. It is probable that deceased's escape was completely cut off before the nullah water broke in. Inspection and inquiry made. *See Report, page 13.*
95	8th August, 2-30 A.M.	Bhatdih Mine, Mohoda P. O., Bihar and Orissa.	Bengal Bhatdih Coal Co., Ld.	Carku Rajwar, (*m.*), 42, Arjun Rajwar, (*m.*), 36, Charku Meah, (*m.*), 35, Goju Mahato, (*m.*), 40, Kongla Mahato, (*m.*), 45, *Coal-cutters.* Uttim Gope, (*m.*), 26, Anup Gope, (*m.*), 22, *Main heading drivers.*	Coal . .	After about four days of very heavy rain the river Damuda, which flows past the inclines of the mine, rose to such a height that at some time on the night of the 7th/8th August it overflowed into the inclines and flooded the workings in which nineteen persons were at work. Of these twelve were rescued, but the retreat of the seven deceased was cut off and they were drowned. Inspection and inquiry made. *See Report, page 14.*
96	16th August, 7-30 A.M.	Kusunda Mine, Kusunda P. O., Bihar and Orissa.	Patel & Co. . . .	Gandhari Bhuia, (*m.*), 20, *Coolie.*	Coal . .	Deceased was sitting on a ledge in a quarry, below which there was 7′ of water, washing his face. He was heard splashing in the water, and an alarm was raised. He was recovered, but artificial respiration applied for over an hour failed to resuscitate him. Inspection and inquiry made.
			HAULAGE—(*16 deaths.*)			
97	21st February, 10 P.M.	Jogta Mine, Sijua P. O., Bihar and Orissa.	Agabeg Brothers . .	Ramjan Meah, (*m.*), 45, *Trammer.*	Coal . .	The deceased, whilst riding on a loaded train, against orders, fell off and was run over sustaining injuries from which he died a week later. Inspection and inquiry made.
98	26th February, 3 A.M.	Dumarkunda Mine, Chirkunda P. O., Bihar and Orissa.	Bengal Coal Co., Ld. .	Lokhoo Manjhi, (*m.*), 22, *Miner.*	Coal . .	Deceased was riding, against orders, on a full set of tubs which were being drawn out of the incline. The set ran off the road and deceased was crushed so badly between the set and a prop that he died two hours later. Inspection and inquiry made.

99	22nd March, 3-30 P.M.	Borrea Mine, Sitarampur P. O., Bengal.	New Birbhum Coal Co., Ld.	Kalu Manjhi, (*m.*), 16, *Trammer.*	Coal . .	Deceased was pushing an empty tub and when passing a full tub his foot was caught under it and he sustained a compound fracture of the foot. He died on the 6th April.
100	18th May, 9 A.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway .	Sohnu, (*m.*), 23, *Coolie.*	Coal . .	A mistri and a carpenter, after loading a tub with timber on the surface, pushed it over the brow without attaching the rope and without seeing that the safety catch block was in position. The tub ran wild and one of the timbers struck deceased, who was one of a gang of four at work cleaning the main dip, about 50 feet from the top. Deceased's thigh was broken and he died from shock about ten hours later. Inspection and inquiry made.
101	5th June, 10 P.M.	Tikak Upper Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Baktu Bahadur, (*m.*), 45, *Tub-pusher.*	Coal . .	Whilst deceased was coupling up tubs at a siding another tub was pushed into the siding and by some means he got his leg between the tubs. He received a deep cut on the inside of the leg, and two months later the limb was amputated. He succumbed on the day after the operation. Inspection and inquiry made.
102	19th June, 1 A.M.	Titulmuri Mine, Sijua P. O., Bihar and Orissa.	Titulmuri Collieries, Ld. .	Ramtahal Bhuia, (*m.*), 38, *Onsetter.*	Coal . .	Deceased and another, while waiting for the empty set of tubs to come down the incline, lay down and went to sleep by the side of the road, and were caught by seven tubs which ran wild from the top of the incline owing to a link breaking. Deceased was killed and the other man was injured. If the runaway switch had been open, as it should have been, the tubs would not have run down the incline. Inspection and inquiry made. *See Report, page 15.*
103	3rd August, 1 A.M.	Lakorka Mine, Katrasgarh P. O., Bihar and Orissa.	Lakorka Coal Co., Ld. .	Jogin Patwar, (*m.*), 35, *Hookman.*	Coal .	While a set of twelve empties was being pushed over the brow on to the slope seven ran wild down the incline and struck deceased who was sitting on the roadside, evidently asleep. The catch siding was not sufficiently far down below the brow to allow the full set to come on to it before closing, and consequently it had to be closed before it could be definitely ascertained if the couplings were in order or not. Inspection and inquiry made. *See Report, page 15.*
104	3rd August, 12-30 P.M.	Barari Mine, Jamadoba P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Prem Meah, (*m.*), 30, *Sirdar.*	Coal	While a set of empties was being lowered down the incline, the head tubman signalled to stop the set, and on being stopped, the bottom tub by some means or other became detached and ran down the incline as far as No. 11 level where it derailed and struck deceased who was on the roadside. He died within half an hour. Inspection and inquiry made.
105	9th September, 9-30 A.M.	Kendwadih Mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Nazir Meah, (*m.*), 15, *Gate boy.*	Coal . .	A hauling rope broke and a set of tubs ran wild, running over deceased who had left his door and was standing at the bottom of the haulage plane. He died in two hours. The rope appeared to be in poor condition. Inspection and inquiry made.
106	18th September, 8-30 P.M.	Bhaga Mine, Jharia P. O., Bihar and Orissa.	Jharia Colliery Co., Ld. .	Hari Rajwar, (*m.*), 32, *Miner.*	Coal .	The tubs at this colliery are fitted with a special form of drawbar made of 1" flexible wire rope and fastened under the floor of the tub by means of two staples. While a set of five loaded tubs was being drawn up, the drawbar of the front one broke at the point it was clipped by the staple. The set ran back and the last tub struck deceased causing injuries from which he died. There was a hook bar or "Monkey" fixed on the last wheel, but it did not act as it was of a bad design. Inspection and inquiry made.
107	22nd September, 8 A.M.	Ekra Khas Mine, Bansjora P. O., Bihar and Orissa.	Maharaja M. C. Nandi .	Munshi Bilaspuri, (*m.*), 45, *Miner.*	Coal .	A set of eight tubs was pushed on to the incline, the last two being uncoupled. The hookman, at the lever working the safety catch which catches the tub's axle in the event of a runaway and upsets it, lost his head and held the lever tight allowing the tubs to run down. The tubs after running down about 100 yards jumped the rails and struck deceased breaking his femur. He died three days later from shock. The accident was due to the carelessness of the hookmen who were fined a week's pay. Inspection and inquiry made.

Fatal Accidents, 1913—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			HAULAGE—*contd.*			
108	29th September, 5-30 P.M.	Borachak Mine, Sitarampur P. O., Bengal.	Umesh Chandra Mukherji.	Singha Manjhian, (*f.*), 60, *Miner's kamin.*	Coal	Deceased was carrying down food for her husband when she was knocked down by a set of empty tubs sustaining injuries from which she died in three hours. She was without a light. If she had had one she would have been able to get out of the road. Inspection and inquiry made.
109	18th October, 10-30 A.M.	Rampur Mine, Jharsaguda P. O., Bihar and Orissa.	Hingir Rampur Coal Co., Ld.	Palan Bhuia, (*m.*), 25, *Tub-pusher.*	Coal	Two empty tubs ran wild on a haulage plane owing to the haulage man neglecting to attach a coupling before lowering the tubs. The tubs struck deceased who sustained injuries from which he died six hours later. He was standing in the haulage road against orders and was warned by the bell man to go away.
110	25th October, 3 P.M.	Madhubpur Mine, Ondal P. O., Bengal.	Imperial Coal Co., Ld.	Magram Bauri, (*m.*), 20, *Coal cutter.*	Coal	Deceased was run into by a full tub which had been pushed out by a miner towards the pit and allowed to run loose by itself. He received injuries from the effects of which he died the next day. Inspection and inquiry made.
111	27th November, 10-15 A.M.	Kurkend Mine, Kurkend P. O., Bihar and Orissa.	Marine Coal Co., Ld.	Chohan Dhobi, (*m.*), 35, *Bailing coolie.*	Coal	Owing to the carelessness of a hookman an empty tub was allowed to run wild from the top of a haulage slope. Deceased, who was walking up the slope, was knocked down and received injuries from which he died some hours later. Inspection and inquiry made.
112	29th November, 3 P.M.	Tirap Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Babulal, (*m.*), 14, *Underground road cleaner.*	Coal	Deceased, whilst riding against orders on the coupling between two loaded tubs which were being hauled by a pony, fell off and was run over sustaining injuries from which he died the same day. Inquiry made.
			SUNDRIES UNDERGROUND—(*14 deaths*).			
113	8th February, 3 P.M.	Huntodih Mine, Mohoda P. O., Bihar and Orissa.	Huntodih Coal Co., Ld.	Nanku Turi, (*m.*), 25, *Pillar cutting sirdar.*	Coal	About half a ton of coal fell from the side of a pillar which was being extracted and knocked out a prop, which hit deceased on the head. He was at first not considered to be seriously injured, but became unconscious during the night, and died at noon next day. Inspection and inquiry made.
114	11th March, 2 P.M.	Central Kurkend Mine, Kusunda P. O., Bihar and Orissa.	Central Kurkend Coal Co., Ld.	Sonia Manjhian, (*f.*), 16, *Coal carrier.*	Coal	Deceased was loading a self-tipping tub in a siding at a point too near the crossing leading to a parallel line, when another tub was pushed along the parallel line and collided with the tub she was loading. The body of the latter tub was overturned by the impact and its contents of coal fell upon her killing her on the spot. There were efficient catches to prevent overturning, but by some unknown means these had been raised. Inspection and inquiry made.

115	1st April, 7 P.M.	Pretoria Mine, Charanpur P. O., Bengal.	Sibpur Coal Co., Ld.	Felu Turi, (*m.*), 28, *Miner.*	Coal	Deceased left his working place and went to work at a pillar. He was removing a piece of overhanging coal, and as it came away, he stepped back, and tripped, and sat down on a sharp stone, dying fifteen minutes after being brought to the surface, from loss of blood and shock. On enquiry it was found that the subordinate officials had been very lax. Inspection and enquiry made.
116	8th April, 6 P.M.	Jamadoba No. 3 Mine, Jamadoba P. O., Bihar and Orissa.	Indian Collieries Syndicate, Ld.	Sambhu Manjhi, (*m.*), 45, *Miner.*	Coal	While dressing roof stone in a pillar working district and in the act of avoiding a dislodged piece, deceased slipped and fell back among the props, striking his back against one and breaking his spine. He died the following day. Inspection and inquiry made.
117	11th April, 11-30 A.M.	Junawani Mine, Kamptee P. O., Central Provinces.	Central India Mining Co., Ld.	Ganpat Dhankar, (*m.*), 28, *Coolie.*	Manganese	Deceased was cutting down a pillar of earth 15 ft. high left standing in an excavation for the purpose of measurement when it suddenly collapsed and a portion fell on him. He died eight hours afterwards. Inspection and inquiry made.
118	9th May, 11 A.M.	Aldih Mine, Sitarampur P. O., Bengal.	Aldih Coal Co., Ld.	Girish Bauri, (*m.*), 25, *Coal cutter.*	Coal	Deceased had come from his working place to talk with one of his gang and was sitting on a level by the side of a tub when a kamin came up from the dip side with a loaded basket of coal. She lost her light before reaching the level and stumbled and fell as she got on to the level and the basket of coal fell on to deceased's back and injured his spinal column. He died seven days afterwards. Inspection and inquiry made.
119	24th May, 1 P.M.	Mudidih Mine, Sijua P. O., Bihar and Orissa.	Reliance Coal Co., Ld.	Mahabir Chamar, (*m.*), 30, *Sirdar.*	Coal	A tub had run away the night before into the sump and had broken the sump boards. Deceased attemped next day to cross the pit on the sump boards which collapsed, precipitating him to the bottom of the sump 30 *ft.* below and killing him instantaneously. Inspection and inquiry made.
120	7th June, 1 A.M.	Khost Mine, Khost P. O., Baluchistan.	North Western Railway	Amir, (*m.*), 28, *Mine carpenter's coolie.*	Coal	Deceased appears to have gone to sleep while waiting for a coal cutter to finish cutting some coal in order to fix a prop in the face, and while asleep to have overbalanced himself and fallen between two kamani boards into the goaf below. He fell a distance of only 12 feet, and fractured his skull, death being instantaneous. He fell through a 2 feet hole left for throwing dirt into the goaf. Inspection and inquiry made.
121	6th July, 11 A.M.	Kantapahari Mine, Panuria P. O. Bengal.	Barakar Coal Co., Ld.	Kunja Moyra, (*m.*), 33, *In charge of friction roller.*	Coal	Deceased tried to cross the pit bottom and fell into the sump through an opening 5′×4′. The sump was 2′ 6″ deep and contained boiling water. He was severely scalded and died the same evening from shock. There was a travelling road round the side of the shaft which he could have used but the sump should have been boarded over completely. Inspection and inquiry made.
122	18th July, 7-15 A.M.	Bhuskajuri Mine, Asansol P. O., Bengal.	Bhuskajuri Coal Co., Ld.	Jitu Ghatwal, (*m.*), 22, *Miner.*	Coal	Deceased slipped and fell while carrying a basket of coal in the mine. He sat down for an hour and then was brought out and died a quarter of an hour later. He had had fever for a month and was in a weak state of health and death was apparently due to heart failure caused by the shock of the fall. Inspection and inquiry made.
123	8th November, 8 A.M.	South Gobindpur Mine, Katrasgarh P. O., Bihar and Orissa.	South Gobindpur Collieries, Ld.	Sukri, (*f.*), 45, *Coal carrier.*	Coal	Deceased was travelling down an incline alone when her clothes caught fire at a flare lamp which she was carrying. Before aid could be summoned she was burnt all over the body, and died 41 hours later as a result of her injuries. Inspection and inquiry made.

Fatal Accidents, 1913—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
			SUNDRIES UNDERGROUND—*concld.*			
124	9th December, 6-30 P.M.	South Kustore Mine, Kustore P. O., Bihar and Orissa.	Raniganj Coal Association, Ld.	Bhim Singh, (*m.*), 35, Debi Singh, (*m.*), 28, *Coal cutters.*	Coal .	The two deceased were driving a main dip gallery in which an electric motor and pump were situated. Whilst carrying out coal in a basket Debi Singh touched the suction pipes and was electrocuted. Bhim Singh rushed to his assistance and was similarly electrocuted. The accident was due to defective insulation coupled with inefficient earthing of the pump motor frame. Inspection and inquiry made.
125	23rd December, 9 P.M.	Khurhurbari Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co. .	Sobia Dosadhin (*f.*), 13, *Coal carrier.*	Coal .	While carrying a basket of coal from a gallery to her tub deceased slipped upon the floor and fell backwards, striking her head on the floor with such violence that her skull was cracked. She died within a few minutes. Inspection and inquiry made.
			Surface machinery—(*1 death*).			
126	31st March, 5-25 P.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway	Wali, (*m.*), 45, *Dust coolie.*	Coal .	Deceased while crossing a shaft got his clothes entangled in a pulley wheel and was drawn round the shaft. He died two days later from internal injuries received. Inspection and inquiry made.
			Surface boilers or pipes bursting—(*2 deaths*).			
127	27th March, 7-30 A.M.	Sripur Mine, Kalipahari P. O., Bengal.	Lodna Colliery Co., Ld.	Rama Dosadh, (*m.*), 35, Sheik Fasiulla, (*m.*), 32, *Fitters' coolies.*	Coal .	The valve chest of a winding engine was blown to pieces by water hammer and the two deceased were so badly scalded by the escaping steam that one died in three hours and the other in ten hours. Inspection and inquiry made.
			On surface railways and tramways belonging to the mine—(*3 deaths*).			
128	3rd May, 4 P.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Bidu, (*f.*), 41, *Shunter.*	Coal .	Deceased was crushed between two wagons while engaged in hand shunting operations. She sustained injuries from which she died next day. She had worked at the mine as a shunter for twelve years. Inquiry made.
129	29th September, 4 P.M.	Mayo Mine, Khewra P. O., Panjab.	Government of India .	Rani, (*f.*), 65, *Coolie.*	Salt .	Deceased had a load of earth on her head. She passed the line for the empty trucks, going between two of them, and as she got on to the other line a full truck ran over her. She sustained injuries from which she died next day.
130	27th October, 11 A.M.	Phularitand Mine, Katrasgarh P. O., Bihar and Orissa.	Phularitand Coal Co., Ld.	Ratni Bourin, (*f.*), 14, *Coal carrier.*	Coal .	Deceased was pushing an empty tub over a bridge, only 2′ 8″ wide and 45′ long, when she lost her balance and fell headlong over the side into the nullah below, a distance of 10′ 6″. She sustained concussion of the brain from the effects of which she died fourteen and a half hours later. Inspection and inquiry made.

			Miscellaneous on surface—*(6 deaths).*				
131	7th January, 8-30 P.M.	Kendwadih Mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Budhan Dosadh, (*m.*), 30, *Hookman.*	Coal	. .	Deceased's clothes caught fire owing to the upsetting of a kerosine oil lamp near a fire at the pit bank. He died the next day. It is probable that the accident was due to a struggle between the deceased and a sirdar. The manager saw deceased half an hour after the accident and found he was drunk. Inspection and inquiry made.
132	2nd April, 9 A.M.	Alkusa Mine, Kustore P. O., Bihar and Orissa.	Raniganj Coal Association, Ld.	Giridhari Meah, (*m.*), 30, *Fitter's coolie.*	Coal	. .	Deceased was fixing up a wire on an electric wire post with another man, when the post snapped and the two men were thrown to the ground, deceased being killed by the fall. Inspection and inquiry made.
133	26th May, 2-10 P.M.	Jamadoba Mine, Jamadoba P. O., Bihar and Orissa.	Indian Collieries Syndicate, Ld.	Annand Roy, (*m.*), 27, *Turner.*	Coal	. .	Deceased caught hold of the iron wire working the fast and loose pulleys of a lathe, and received an electric shock which killed him instantaneously. It was afterwards discovered that a leak had occurred through the failure of the insulation of a high tension wire carrying a current of 2,300 volts. Inspection and inquiry made.
134	3rd July, 10-30 A.M.	Chooling Mine, Maliwan P. O., Lower Burma.	Burma Development Syndicate, Ld.	A. E. Kinghorn, (*m.*), 29, *Manager.*	Wolfram		Deceased who was the manager of the mine, while inspecting a break down on an electric tramway, touched a live electric wire charged with some 5,000 volts. He was killed instantaneously.
135	6th August, 5 P.M.	Titulmuri Mine, Sijua P. O., Bihar and Orissa.	Titulmuri Collieries, Ld.	Puria Gope, (*f.*), 25, *Loading woman.*	Coal	. .	While loading a wagon with coal deceased slipped off the loading platform and injured her skull. Compression of the brain ensued, which caused death a few hours later. Inspection and inquiry made.
136	27th November, 2 P.M.	Bhaga Mine, Jharia P. O., Bihar and Orissa.	Jharia Colliery Co., Ld.	Bhiki Goala, (*m.*), 27, *Tramway mistri.*	Coal	. .	Whilst deceased and other persons, including the head fitter, were repairing a steam joint under the winding engine, steam was inadvertently turned on at the boiler 50 feet away. He received severe scalds which resulted in death on the following day. The boiler fireman who turned on the steam was unaware that any persons were working on the steam range. Inspection and inquiry made.

Fatal Accidents, 1913—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Reason for exclusion.	Cause of accident and remarks.
			DEATHS NOT INCLUDED IN THE STATISTICS—(*39 deaths*).				
1	6th February, 4-30 P.M.	Jamuria Mine, Nandi P. O., Bengal.	Equitable Coal Co., Ld.	Thatu Manjhi, (*m.*), 11.	Coal . .	Not employed	A full set was being formed on the main haulage road from No. 13 level and the front tub, which was evidently not spragged by the hookman, ran wild into the level and caught deceased who was standing by the side of the road in the dark as his light had gone out. His leg was broken and he died from shock two days later. Inspection and inquiry made.
2	18th February, 9 P.M.	Jamadoba Mine, Jamadoba P. O., Bihar and Orissa.	Indian Collieries Syndicate, Ld.	Tulsi Mahato, (*m.*), 60, *Screening plant coolie.*	Coal . .	Not a mining accident.	Two wagons were being brought by some coolies ; deceased appears to have been pushing the first wagon when the second wagon came in contact with it crushing him between the buffers. Inspection and inquiry made.
3	22nd February, 11 A.M.	Kurkend Mine, Kurkend P. O., Bihar and Orissa.	Sudamdih Coal Co., Ld. .	Sumri Dhanuk, (*f.*), 30, *Tub loader.*	Coal . .	Not a mining accident.	Deceased was crushed between the buffers of two railway wagons while attempting to cross the line when the engine was shunting.
4	2nd March, 3 P.M.	Sudamdih Mine, Bhujudih P. O., Bihar and Orissa.	Empire Coal Co., Ld. .	Amenni, (*f.*), 8	Coal . .	Not employed	Deceased was engulphed in a surface subsidence caused by the sudden collapse of underground workings. Her body was not found. Inspection and inquiry made.
5	17th March, 7 P.M.	Joyrampur Mine, Jharia P. O., Bihar and Orissa.	Khengarji Triku & Co. .	Barki, (*f.*), 2.	Coal . .	Not employed	Some coolies' huts caught fire and deceased was burnt to death.
6	18th March, 1 A.M.	Damudapur Mine, Nandi P. O., Bengal.	Bengal Coal Co., Ld. .	Ranjit Manjhi, (*m.*), 8.	Coal . .	Not employed	Deceased lay asleep about 20 feet away from the edge of a pillar at which miners were working. A miner wedged down a block of coal, 5′×1′ 6″×1′ 6″, which, in falling, struck a roof post and knocked it out. The post fell on deceased, and fractured his skull. Since the accident children have not been allowed in the pillar cutting district at all. Inspection and inquiry made.
7	29th March, 9-30 A.M.	Budruchak Mine, Sijua P. O., Bihar and Orissa.	Budruchak Coal Mining Co., Ld.	Goolbaise Goalin, (*f.*), 10.	Coal . .	Not employed	Deceased presumably fell into an old incline mouth full of water to which she had gone to bathe with two infants, and in which her body was recovered some four days later. Inspection and inquiry made.
8	29th March, 3 P.M.	Laikdih Mine, Chirkunda P. O., Bihar and Orissa.	Bengal Coal Co., Ld. .	Atika Bauri, (*m.*), 35.	Coal . .	Not employed	Deceased was cutting coal in an old quarry for his own use from under a stone band which had been left unsupported when a piece, 6′×7′×6″, fell on him causing injuries to his spine, from the effects of which he died. He had no business to be working there. Inspection and inquiry made.

9	3rd April, 9 A.M.	Salanpur Mine, Sitarampur P. O., Bengal.	Borrea Coal Co., Ld.	Guli Roy, (*m.*), 55, *Coolie.*	Coal	Not a mining accident.	An iron roller was being taken from one part of the colliery to another. At the place of the accident there was a sharp dip in the road and the contractor in charge having only fifteen men to pull the roller gave orders to let go and allowed it to run by itself down the slope. As every one let go, the handle swung up and caught deceased on the head fracturing his skull. Inspection and inquiry made.
10	8th April, Unknown.	Charanpur Mine, Charanpur P. O., Bengal.	Apcar & Co.	Ram Prosad Lal, (*m.*), 6.	Coal	Not employed	Deceased was staying in some peons' quarters with his father and evidently wandered away and fell into the boiler feed water tank, 7′ deep, while his father was asleep in the afternoon. His body was found next morning by a pump khalasie. The tank was securely fenced. Inspection and inquiry made.
11	17th April, 11-30 A.M.	West Ghusik Mine, Kalipahari P. O., Bengal.	West Ghusik Coal Concern	Anath Bauri (*m.*), 10 months.	Coal	Not employed	Deceased was thrown down an abandoned mine shaft by her mother. The shaft being full of water the child was drowned. Inspection and inquiry made.
12	17th April, 12 Noon.	Lutchipur Mine, Sitarampur P. O., Bengal.	Lutchipur Coal Co., Ld.	Ganesh Manjhi, (*m.*), 40, *Coal cutter*; Sobi Baurin, (*f.*), 30, *Surface kamin.*	Coal	Not a mining accident.	Deceased were employed inside a "dhowra" making country powder for a contractor, when the powder was set alight and they were so badly burned that they died from the effects. Either they or the contractor's agent were evidently smoking at the time. Inspection and inquiry made.
13	23rd April, 5 P.M.	Chandametta Mine, Pench P. O., Central Provinces.	Pench Valley Coal Co., Ld.	Tulsidass, (*m.*), 4.	Coal	Not employed	Deceased apparently had been collecting "mahowa" near the foot of a tree and wandered through a fence into a heap of heated ashes about 7″ thick. He received burns about the feet, which caused him to fall and be burnt about the body. Death ensued on the third day from pneumonia said to have been brought on by the burns. Inspection and inquiry made.
14	14th May, 12 noon.	Madhubpur Mine, Ondal P. O., Bengal.	Imperial Coal Co., Ld.	Niri Goalin, (*f.*), 30.	Coal	Not employed	Deceased, who was the wife of one of the colliery carters and was not employed, tried to get on to a train of full tubs and missing her footing, fell between the tubs and was run over, death being practically instantaneous. Inspection and inquiry made.
15	9th June, 5 P.M.	Kankani Mine, Bansjora P. O., Bihar and Orissa.	Eastern Coal Co., Ld.	Durga Gope, (*m.*), 5.	Coal	Not employed	Deceased, who was only aged 5, was subject to epileptic fits. He was missed about 4 P.M. and his body was found in a tank two hours later. Inspection and inquiry made.
16	15th June, 8-30 A.M.	Madhubpur Mine, Ondal P. O., Bengal.	Imperial Coal Co., Ld.	Bawsingh Manjhi, (*m.*), 3.	Coal	Not employed	Deceased fell into a small pool of water near a "dhowra" and was drowned. It is not known how he came to fall in. Inspection and inquiry made.
17	16th June, 12-30 P.M.	Napara Khas Mine, Asansol P. O., Bengal.	Maharaja M. C. Nandi	Somra Bhuia, (*m.*), 2.	Coal	Not employed	Deceased was sitting with his parents under an East Indian Railway hopper wagon while they were having food. As it was a hot day they went under the wagon for shade. While there one of the bottom doors opened and the coal in the wagon, about 9 tons, poured down and buried deceased who was suffocated. Inspection and inquiry made.
18	21st June, 11 A.M.	Dheriajoba Mine, Kusunda P. O., Bihar and Orissa.	Dheriajoba Coal Co., Ld.	Upasi Kaharin, (*f.*), 10. Sadai Kaharin, (*f.*), 8.	Coal	Not employed	See remarks against No. 46 on page 45.

Fatal Accidents, 1913—*concld.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Reason for exclusion.	Cause of accident and remarks.
			DEATHS NOT INCLUDED IN THE STATISTICS—*contd.*				
19	22nd June, 5-30 P.M.	Kankani Mine, Bangjora P. O., Bihar and Orissa.	Eastern Coal Co., Ld.	Chinta Bhuiani, (*f.*), 25.	Coal	Not employed	Deceased fell into an old sump 13′ deep at the bottom of a tank, out of which the water had been drained. The sump was full of mud, and deceased's body disappeared beneath it and so was not seen at the time of the occurrence. Inspection and inquiry made.
20	23rd June, 2 P.M.	Serampur Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Batulan Johlin, (*f.*), 10.	Coal	Not employed	Deceased, with a number of other children, moved a metre-gauge low-side wagon which was standing in the siding. She fell off one of the buffers on which she was riding and the wheel of the wagon passed over her head, crushing it.
21	6th July, 8 A.M.	Bhutgoria Mine, Jamadoba P. O., Bihar and Orissa.	Aldih Coal Co., Ld.	Tejoya Kurmi, (*m.*), 2.	Coal	Not employed	Deceased was playing on the endless haulage tram line when some tubs ran over his leg. He sustained a compound fracture of the right leg and died a week afterwards, death probably being hastened by chronic dysentery.
22	19th July, 7 A.M.	Akharia Mine, Ganwan P. O., Bihar and Orissa.	Allam Salim	Bhichhero Mian, (*m.*), 45.	Mica	Not a working mine.	Deceased was stealing mica from a disused mine, when the roof suddenly collapsed and killed him.
23	24th July, 7-30 P.M.	Serampur Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Amrit Chamar, (*m.*), 20, *Coal cutter.*	Coal	Not a mining accident.	In attempting to get on to one of the loaded wagons which were being drawn out of the siding by the broad gauge engine, deceased slipped and fell on to the rails and was killed instantly.
24	4th August, 8 A.M.	Dendwa Mine, Sitarampur P. O., Bengal.	New Manbhum Coal Co., Ld.	Ram Prosad Nunia, (*m.*), 2.	Coal	Not employed	Deceased was found in a pool of water, 1′ 8″ deep at the deepest point, by his father, where he had evidently fallen in while playing about.
25	14th August, 10 A.M.	Miragpur Mine, Kamptee P. O., Central Provinces.	Central India Mining Co., Ld.	Itwari, (*f.*), 2½.	Manganese	Not employed	Deceased who had been left at home by her parents in charge of a sister, seven years old, wandered on to the tram line and was knocked down by a tub pushed by two men. Her skull was smashed and death was instantaneous. Inspection and inquiry made.
26	27th August, 6-30 A.M.	Balaghat Mine, Balaghat P. O., Central Provinces.	Central Provinces Prospecting Syndicate, Ld.	Bibla Pardhan, (*f.*), 5	Manganese	Not employed	A stone about 1lb. in weight was blown 520 feet from a shot hole and hit deceased on the head fracturing her skull from which she died about half an hour later. The explosive used was said to be only a normal charge of country gunpowder, which makes it a very extraordinary occurrence. Inspection and inquiry made.

27	30th August, 6 A.M.	Banksimulla Mine, Charanpur P. O., Bengal.	Bengal Coal Co., Ld.	Chand Ray Manjhi, (*m.*), 35, *Miner.*	Coal	Not a mining accident.	Deceased was making country powder into cartridges in his house. The powder appears to have been ignited by a small miner's lamp which was burning in the house, and deceased was burnt about the body. He died four days later from shock. Inspection and inquiry made.
28	5th September, Between 12 & 6 P.M.	Sibpur Mine, Charanpur P. O., Bengal.	Katras Jharia Coal Co., Ld.	Samchar Kol, (*m.*), 7.	Coal	Not employed	The body of deceased was found floating in a tank, 100′ × 50′, which was used for bathing. Inspection and inquiry made.
29	3rd October, 5-15 P.M.	Chowrasi Mine, Dishargarh P. O., Bengal.	Equitable Coal Co., Ld.	Sambha Bauri, (*m.*), 12, *Goat herd.*	Coal	Not employed	Deceased was knocked down by a loaded tub while crossing the railway line after his goats. He died from shock.
30	9th October, 10 A.M.	Jinagora Mine, Jharia P. O., Bihar and Orissa.	M. Kumarji Vasta & Co.	Sogamani Napit, (*f.*), 15.	Coal	Not employed	Deceased, who was employed at a neighbouring mine, was drowned in a quarry 100′ × 30′ × 28′ deep. It is not known how she came to be drowned. Inspection and inquiry made.
31	10th October, 5-35 A.M.	Sanctoria Mine, Dishargarh P. O., Bengal.	Bengal Coal Co., Ld.	Raghu, (*m.*), 55, *Coupling khalasi.*	Coal	Not a mining accident.	While coupling up wagons deceased was caught between the buffers and crushed to death.
32	23rd October, 7 A.M.	Sowardih Mine, Bhujudih P. O., Bihar and Orissa.	Sowardih Coal Co.	Rosool Bibi, (*f.*), 10, *Picking coolie.*	Coal	Not a mining accident.	Several coolies were hand shunting a wagon on a siding when deceased was run over. She sustained a lacerated wound on the right forearm and the elbow joint was split. She was sent to Dhanbaid Hospital where she succumbed to her injuries three days later. Inspection and inquiry made.
33	23rd October, 8 A.M.	Pootki Mine, Bansjora P. O., Bihar and Orissa.	Eastern Coal Co., Ld.	Bisnu Nunia, (*m.*), 11.	Coal	Not employed	While washing cooking utensils at the edge of an unprotected feed water tank, measuring 8′ 9″ × 7′ 9″ × 4′ 9″ deep, deceased must have overbalanced and fallen in. His body was recovered shortly afterwards. The provision of a fence wall would have prevented the accident. Inspection and inquiry made.
34	26th November, 10 A.M.	Tramway at Tirodi, Kamptee P. O., Central Provinces.	Central India Mining Co., Ld.	Amani, (*f.*), 8.	Manganese	Not employed	Deceased was drawing water from a well when her foot got entangled with the rope attached to the bucket of water and this caused her to fall into the well ; when got out after about 25 minutes life was extinct. Inspection and inquiry made.
35	18th December, Not known.	Gangutia Mine, Dishargarh P. O., Bengal.	Bengal Nagpur Coal Co., Ld.	Not known, (*m.*), 25 ?	Coal	Not employed	On dewatering a shaft deceased's body was found in the sump in a state of nudity. A piece of cloth containing Rs. 13 was securely tied round the head. It was evident from the injuries that deceased either fell or was thrown down the shaft. It was suspected that murder was the cause and the case was left in the hands of the police. The shaft top was properly fenced. Inspection and inquiry made.
36	19th December, 5 P.M.	Ranadanga Mine, Charanpur P. O., Bengal.	Economic Coal Co., Ld.	Mani Manjhian, (*f.*), 50, *Kamin.*	Coal	Not employed	Deceased presumably slipped by accident and fell down a well and was drowned. No one saw the accident. The well was fenced, but deceased was in the habit of drawing water from there as it was close to the "dhowra" in which she lived. Inspection and inquiry made.
37	29th December, 10 P.M.	Pretoria Mine, Charanpur P. O., Bengal.	Sibpur Coal Co., Ld.	Sukhu Kol, (*m.*), 3.	Coal	Not employed	Deceased who was left by his parents in "dhowra" with his elder brother, upset a small pit lamp and was very badly burnt. He died from shock. Inspection and inquiry made.

APPENDIX II—*contd.*

Table No. 2.

Statement of fatal and serious accidents in and about mines regulated by the Indian Mines Act, 1901, during the year 1913.

Province.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS. Number of separate fatal accidents.	FATAL ACCIDENTS. Number of deaths. Below ground.	FATAL ACCIDENTS. Number of deaths. Above ground.	FATAL ACCIDENTS. Number of deaths. Total deaths.	SERIOUS ACCIDENTS. Number of serious non-fatal accidents.	SERIOUS ACCIDENTS. Number of persons seriously injured. Below ground.	SERIOUS ACCIDENTS. Number of persons seriously injured. Above ground.	SERIOUS ACCIDENTS. Number of persons seriously injured. Total number of persons injured.	Death-rate per 1,000 persons employed. Below ground.	Death-rate per 1,000 persons employed. Above ground.	Death-rate per 1,000 persons employed. Below and above ground.
					A.—COAL.								
Bihar and Orissa	Hazaribagh: Bokaro-Ramgarh.	184	...	..	...	...	2	3	...	3	...	...	...
	Hazaribagh: Giridih	8,328	3	4	...	4	11	9	2	11	·78	...	·48
	Hazaribagh: Jharia	176	...	...	...	...	...	...	...	..	...	...	...
	Manbhum, Jharia	71,244	64	78	6	84	50	37	14	51	1·76	·22	1·18
	„ Raniganj	6,088	4	30	...	30	5	5	...	5	7·25	...	4·93
	Sonthal Parganas, Raniganj	26	...	...	...	...	...	...	...	...	...	...	..
	„ Rajmahal	54	...	...	...	...	...	...	...	...	...	...	...
	Palamau, Daltonganj	773	...	...	...	..	1	...	1	1	...	...	...
	Sambalpur, Hingir-Rampur	489	1	1	...	1	.	...	...	...	3·04	...	2·05
	TOTAL	87,362	72	113	6	119	69	54	17	71	2·06	·18	1·36
Bengal	Bankura, Raniganj	71	...	...	...	...	...	...	...	...	...	...	...
	Birbhum „	35	...	...	...	...	...	...	...	...	...	...	...
	Burdwan „	38,447	27	41	2	43	45	41	7	48	1·63	·15	1·2
	TOTAL	38,553	27	41	2	43	45	41	7	48	1·63	·15	1·12
Central Provinces	Chhindwara, Pench Valley	832	1	6	...	6	4	2	2	4	9·77	...	7·21
	Narsinghpur, Mohpani	1,178	...	...	...	...	3	3	...	3	...	...	...
	Chanda, Ballarpur	674	...	...	..	...	2	2	...	2	...	...	...
	TOTAL	2,684	1	6	...	6	9	7	2	9	3·21	...	2·24
Panjab	Jhelum	846	1	1	...	1	5	5	...	5	1·71	...	1·18
	Shahpur	46	...	...	...	...	...	...	...	...	..	...	...
	TOTAL	892	1	1	...	1	5	5	...	5	1·68	...	1·12
Assam	Lakhimpur	2,458	10	9	1	10	25	21	4	25	5·43	1·25	4·07
Baluchistan	Palan	16	...	...	...	...	...	...	...	...	...	...	...
	Kalat	10	...	...	...	...	...	...	...	...	...	...	...
	Quetta-Pishin	101	...	...	..	...	...	..	...	...	...	...	...
	Sibi, Khost, etc.	923	5	4	1	5	12	10	2	12	6·60	3·15	5·42
	Loralai, Loralai	37	1	1	...	1	...	...	...	...	45·45	..	27·03
	TOTAL	1,087	6	5	1	6	12	10	2	12	7·02	2·67	5·52
North-West Frontier Province.	Hazara	6	...	...	...	...	..	...	...	...	...	...	...
	GRAND TOTAL (COAL)	133,042	117	175	10	185	165	138	32	170	2·06	·21	1·39

APPENDIX II—*contd.*

Table No. 2—*contd.*

Statement of fatal and serious accidents in and about mines regulated by the Indian Mines Act, 1901, during the year 1913—*contd.*

Province.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS.				SERIOUS ACCIDENTS.				DEATH-RATE PER 1,000 PERSONS EMPLOYED.		
			Number of separate fatal accidents.	Number of deaths.			Number of serious non-fatal accidents.	Number of persons seriously injured.					
				Below ground.	Above ground.	Total deaths.		Below ground.	Above ground.	Total number of persons injured.	Below ground.	Above ground.	Below and above ground.
			B.—MICA.										
Bihar and Orissa	Monghyr	447	...	...	...	...	...	...	...	...	...	...	...
	Hazaribagh	10,008	...	...	...	...	4	5	...	5	...	...	..
	Gaya	1,827	...	...	..	...	...	...	...	...	..	...	...
	Sonthal Parganas	32	...	...	...	..	..	..	...	...	...	...	...
	TOTAL	12,314	...	...	...	...	4	5	...	5	...	...	...
Madras	Coimbatore	32	...	...	...	...	...	...	...	...	...	...	...
	Nellore	5,719	...	...	...	...	...	...	...	...	...	...	...
	Salem	251	...	...	...	...	1	1	...	1	...	.	...
	TOTAL	6,002	...	...	...	...	1	1	...	1	...	...	...
Rajputana	Ajmer	317	..	...	...	...	...	...	...	...	...	...	...
	Merwara	101	...	...	...	...	...	..	...	...	...	...	...
	TOTAL	418	...	...	...	...	...	...	...	.	...	...	...
	GRAND TOTAL (MICA)	18,734	..	...	...	...	5	6	...	6	...	...	...
			C.—MANGANESE.										
Central Provinces	Nagpur	3,524	3	3	...	3	1	...	1	1	1·16	...	·85
	Bhandara	1,280	...	...	...	...	...	...	...	...	...	...	...
	Balaghat	4,656	2	2	...	2	4	3	2	5	·49	...	·43
	Chhindwara	714	...	...	...	...	1	...	1	1	...	...	...
	TOTAL	10,174	5	5	...	5	6	3	4	7	·61	...	·49
Madras	Vizagapatam	2,589	1	2	...	2	1	...	1	1	·90	...	·77
Bombay	Panch Mahals	1,197	...	...	...	...	5	1	4	5	...	...	...
	GRAND TOTAL (MANGANESE)	13,960	6	7	...	7	12	4	9	13	·62	...	·50
			D.—LIMESTONE.										
Central Provinces	Jabalpur-Katni	2,677	1	1	...	1	2	2	...	2	·49	..	·37
Panjab	Hoshiarpur	68	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (LIMESTONE)	2,745	1	1	...	1	2	2	...	2	·48	...	·36
			E.—SALT.										
Panjab	Shahpur	34	...	...	...	...	...	...	...	...	...	...	...
	Jhelum	840	1	...	1	1	4	2	3	5	...	20·41	1·19
	Mianwali	58	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (SALT)	932	1	...	1	1	4	2	3	5	...	20·41	1·07

APPENDIX II—*contd.*

Table No. 2.

Statement of fatal and serious accidents in and about mines regulated by the Indian Mines Act, 1901, during the year 1913.

Province.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS.				SERIOUS ACCIDENTS.				DEATH-RATE PER 1,000 PERSONS EMPLOYED.		
			Number of separate fatal accidents.	Number of deaths. Below ground.	Above ground.	Total deaths.	Number of serious non-fatal accidents.	Number of persons seriously injured. Below ground.	Above ground.	Total number of persons injured.	Below ground.	Above ground.	Below and above ground.
		F.—GEMS.											
Burma	Mogok (Rubies, etc.)	1,815	...	...	...	...	2	2	...	2	...	...	...
Madras	Kurnool (Diamonds)	...	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (GEMS)	1,815	..	...	...	...	2	2	...	2	...	...	...
		G.—SLATE.											
Bihar and Orissa	Monghyr	319	...	...	...	...	1	...	1	1	...	...	...
Panjab	Kangra	395	...	...	...	...	...	...	...	...	...	...	...
	Gurgaon	271	...	...	...	...	...	...	...	..	...	...	...
	TOTAL	666	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (SLATE)	985	...	...	...	...	1	...	1	1	..	...	...
		H.—GOLD.											
Madras	Anantapur	1,783	3	9	...	9	3	3	...	3	18·04	...	5·05
		I.—IRON.											
Bihar and Orissa	Singhbhum	1,294	...	...	...	...	...	...	...	...	...	...	...
Central Provinces	Jabalpur	101	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (IRON)	1,395	...	...	...	...	...	...	...	...	...	...	...
		J.—WOLFRAM.											
Burma	Tavoy	2,368	5	5	...	5	5	3	2	5	3·62	...	2·11
	Mergui	163	1	...	1	1	...	...	...	...	...	13·33	6·14
	GRAND TOTAL (WOLFRAM).	2,531	6	5	1	6	5	3	2	5	3·40	·94	2·37
		K.—MAGNESITE.											
Madras	Salem	1,079	...	...	...	...	...	...	...	...	...	...	...
		L.—CHROMITE.											
Baluchistan	Quetta-Pishin	8	...	...	...	...	...	...	...	...	...	...	...
	Zhob	62	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (CHROMITE)	70	...	...	...	...	...	...	...	...	...	...	...

APPENDIX II—*contd.*

Table No. 2—*concld.*

Statement of fatal and serious accidents in and about mines regulated by the Indian Mines Act, 1901, during the year 1913.

Province.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS. Number of separate fatal accidents.	FATAL ACCIDENTS. Number of deaths. Below ground.	FATAL ACCIDENTS. Number of deaths. Above ground.	FATAL ACCIDENTS. Number of deaths. Total deaths.	SERIOUS ACCIDENTS. Number of serious non-fatal accidents.	SERIOUS ACCIDENTS. Number of persons seriously injured. Below ground.	SERIOUS ACCIDENTS. Number of persons seriously injured. Above ground.	SERIOUS ACCIDENTS. Number of persons seriously injured. Total number of injured.	Death-rate per 1,000 persons employed. Below ground.	Death-rate per 1,000 persons employed. Above ground.	Death-rate per 1,000 persons employed. Below and above ground.
		M.—COPPER ORE.											
Bihar and Orissa	Singhbhum	1,215	1	1	...	1	2	1	1	2	2·45	...	·82
		N.—FULLER'S EARTH.											
Central Provinces	Jabalpur	* ...	...	...	...	...	...	...	...	...	...	...	...
		O.—CLAY.											
Bihar and Orissa	Palamau	@ 9	...	...	...	...	...	...	...	...	...	...	...
Central Provinces	Jabalpur	181	...	...	..	...	...	...	...	...	...	...	...
Delhi	Delhi	130	1	1	...	1	...	...	...	...	15·38	...	7·69
Madras	Nellore	10	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Clay)	330	1	1	...	1	...	...	...	...	4·33	...	3·03
		P.—GALENA.											
Burma	Mandalay	...	...	...	...	...	...	...	...	...	...	...	...
Central Provinces	Drug	42	...	...	...	...	...	...	...	...	...	...	...
Madras	Kurnool	...	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Galena)	42	...	...	...	...	...	...	...	...	...	...	...
		Q.—TIN.											
Bihar and Orissa	Hazaribagh	12	...	...	...	...	...	...	...	...	...	...	...
Burma	Mergui (Maliwan)	† ...	...	...	...	...	...	...	...	...	...	...	...
	Tavoy	130	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Tin)	142	..	...	...	...	...	...	...	...	...	...	...
		R.—STEATITE.											
Central Provinces	Jabalpur	102	...	...	..	...	...	...	...	...	...	...	...
Madras	Kurnool	214	.	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Steatite)	316	...	...	...	...	...	...	...	...	...	...	...
		S.—GRAPHITE.											
Madras	Ramnad	...	...	...	...	...	...	...	...	...	...	...	...
		T.—CORUNDUM.											
Madras	Trichinopoly	144	...	...	...	...	...	...	...	...	...	...	...
		U.—SAMARSKITE.											
Madras	Nellore	‡ ...	...	...	..	...	...	...	...	...	...	...	...
	GRAND TOTAL (All minerals).	181,260	136	199	12	211	201	161	48	209	1·71	·19	1·16

* Figures included with those for Limestone.
† " " " " " Wolfram.
‡ " " " " " Mica.

APPENDIX II—*contd.*

Table No. 3.

Statement of fatal accidents in mines regulated by the Indian Mines Act, 1901, during the year 1913, classified according to the age and sex of the workers.

Mineral.	Province and mineral field.	Number of separate fatal accidents.	Number of deaths.								Total below and above ground.
			Below ground.				Above ground.				
			Adult males.	Adult females.	Children (under 12).	Total.	Adult males.	Adult females.	Children (under 12).	Total.	
Coal	Baluchistan	6	5	...	...	5	1	...	...	1	6
	Bihar and Orissa — Giridih	3	3	1	...	4	...	...	...	...	4
	Bihar and Orissa — Jharia	64	67	11	...	78	4	2	...	6	84
	Bihar and Orissa — Raniganj	4	23	7	...	30	...	...	...	..	30
	Bihar and Orissa — Sambalpur	1	1	...	...	1	...	...	...	...	1
	Total Bihar and Orissa	72	94	19	...	113	4	2	...	6	119
	Bengal—Raniganj	27	25	16	...	41	2	...	...	2	43
	Central Provinces	1	6	...	...	6	...	...	...	...	6
	Eastern Bengal and Assam	10	8	1	...	9	...	1	...	1	10
	Panjab	1	1	...	...	1	...	...	...	...	1
	Total Coal	117	139	36	...	175	7	3	...	10	185
Manganese	Central Provinces	5	5	...	...	5	...	...	...	...	5
	Madras	1	1	1	...	2	...	...	...	...	2
	Total Manganese	6	6	1	...	7	...	...	...	...	7
Limestone	Central Provinces	1	...	...	1	1	...	...	...	...	1
Salt	Panjab	1	...	...	...	...	...	1	...	1	1
Gold	Madras	3	9	...	...	9	...	...	...	...	9
Wolfram	Burma	6	5	...	...	5	1	...	...	1	6
Copper	Bihar and Orissa	1	1	...	...	1	...	...	...	...	1
Clay	Delhi	1	1	...	...	1	...	...	...	...	1
GRAND TOTAL, ALL MINERALS		136	161	37	1	199	8	4	...	12	211

APPENDIX II—*concld.*

Table No. 4.

Statement of fatal accidents in mines regulated by the Indian Mines Act, 1901, during the year 1913, classified according to cause of accident.

Mineral worked.	Number of separate fatal accidents.	Number of persons killed.											Death-rate per 1,000 persons employed.		
		Explosions of fire-damp.	Falls of roof.	Falls of side.	In shafts.	Suffocation by gases.	By explosives.	Irruptions of water or falling into water.	Haulage.	Miscellaneous below ground.	Surface.	Total deaths.	Below ground.	Above ground.	Below and above ground.
Coal	117	29	33	27	25	1	1	30	16	13	10	185	2·06	·21	1·39
Manganese	6	...	...	4	2	...	...	...	...	1	...	7	·62	...	·50
Limestone	1	...	...	1	...	...	...	...	...	...	...	1	·48	...	·36
Salt	1	...	...	...	...	...	...	...	...	...	1	1	...	20·41	1·07
Gold	3	..	7	1	1	...	...	...	...	...	...	9	18·04	...	5·05
Wolfram	6	...	...	4	...	...	1	...	...	...	1	6	3·40	·94	2·37
Copper	1	...	...	...	1	...	...	...	...	...	...	1	2·45	...	·82
Clay	1	...	1	...	...	...	...	...	...	...	..	1	4·33	..	3·03
Total 1913	136	29	41	37	29	1	2	30	16	14	12	211	1·71	·19	1·16
Total preceding year.	133	1	35	44	24	5	8	23	16	7	22	185	1·57	·36	1·12
Difference	+3	+28	+6	—7	5	—4	—6	+7	...	+7	—10	+26	+·14	—·17	+·04

APPENDIX III.

PROSECUTIONS UNDER THE MINES ACT.

Statement of prosecutions instituted under the Indian Mines Act, 1901, during the year 1913.

Province.	District.	Number of prosecutions.	Number of persons prosecuted.	Number convicted.	Numbers of rules and sections of the Act contravened.	Remarks.
Bengal	Burdwan	1	4	4	Section 20, Rules 2(*e*), 2(*b*), and 19 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	1	1	Ditto.	
	Do.	1	1	...	Section 20, Rules 12 and 19 of Notification No. 864-68-20, dated 10th March 1904, and Rule 2 of Notification No. 11793—103, dated 30th December 1908.	Withdrawn.
	Do.	1	1	1	Section 20, Rules 5, 6 and 7 of Notification No. 11793—103, dated 30th December 1908.	
	Do.	1	1	1	Ditto.	
Bihar and Orissa	Manbhum	1	2	1	Ditto.	
	Do.	1	3	3	Section 20, Rule 1 of Notification No. 11793—103, dated 30th December 1908.	
Bengal	Burdwan	1	1	1	Section 20, Rule 1 of Notification No. 11793—103, dated 30th December 1908.	
Bihar and Orissa	Manbhum	1	1	...	Section 20, Rule 24, of Notification No. 864-68-20, dated 10th March 1904.	Withdrawn.
	Do.	1	1	1	Ditto.	
Central Provinces	Jabalpur	1	1	..	Section 20, Rule 3 of Notification No. 6436-152, dated 2nd September 1911.	Withdrawn.
	Do.	1	1	1	Section 20, Rule 1 of Notification No. 6436-152, dated 2nd September 1911.	
Bengal	Burdwan	1	1	1	Section 20, Rules 2(*b*), 2(*e*), and 19 of Notification No. 864-68-20, dated 10th March 1904.	
Bihar and Orissa	Hazaribagh	1	1	1	Section 20, Rule 1 of Notification No. 11793—103, dated 30th December 1908.	
	Do.	1	1	...	Section 20, Rule 1 of Notification No. 11793—103, dated 30th December 1908.	Acquitted.
	Manbhum	1	1	1	Section 20, Rule 1 of Notification No. 864-68-20, dated 10th March 1904.	
	Hazaribagh	1	1	...	Section 20, Rule 1 of Notification No. 11793—103, dated 30th December 1908.	Acquitted.
	Do.	1	1	...	Ditto	Do.
	Do.	1	1	...	Ditto	Do.
	Do.	1	1	...	Ditto	Do.
	Do.	1	1	...	Ditto	Do.
	Do.	1	1	...	Ditto	Do.

APPENDIX IV.

MISCELLANEOUS.

Statement No. 1.

List of Inspection Circles.

No. 1 Circle.	No. 2 Circle.	No. 3 Circle.
(*a*) All mines in the district of Manbhum, which are situated west of a line drawn from Adra Junction at mile 175 of the Bengal-Nagpur Railway to Gobindpur at mile 169 on the Grand Trunk Road and continued across the district in each direction, and all mines in the district of Palamau.	(*a*) All mines in the districts of Burdwan and Bankura to the west of a line drawn from mile 131 on the East Indian Railway main line near Asansol to mile 141 on the Ondal loop near Gaurangdi, and continued across the districts in each direction; and all mines in the district of Manbhum east of a line drawn from Adra Junction at mile 175 on the Bengal-Nagpur Railway to Gobindpur at mile 169 on the Grand Trunk Road, and continued across the district in each direction, and all mines in the districts of Hazaribagh, Gaya, Monghyr, Darjeeling and Ranchi.	(*a*) All mines in the districts of Burdwan and Bankura to the east of a line drawn from mile 131 on the East Indian Railway main line near Asansol to mile 141 on the Ondal loop near Gaurangdi, and continued across the districts in each direction, and all mines in the districts of the Sonthal Parganas, Birbhum, Singhbhum and Sambalpur.
(*b*) All mines in Assam.	(*b*) All mines in Baluchistan.	(*b*) All mines in the Presidency of Bombay.
(*c*) All mines in Burma.	(*c*) All mines in the United Provinces.	(*c*) All mines in the Central Provinces.
	(*d*) All mines in the Panjab.	(*d*) All mines in the Presidency of Madras.
	(*e*) All mines in Ajmer-Merwara.	

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 2.

List of holders of certificates as managers of coal mines in British India.

(*a*) Certificates granted to holders of English certificates of competency.

FIRST CLASS.

NAME.	No. of Indian certificate.	Date of Indian certificate.	No. of English certificate.	Date of English certificate.
Hall, Andrew	168	17th March 1913	4041	10th June 1912.
Phelps, James Ernest	169	Ditto	3682	29th June 1910.
Lancaster, Harold	170	22nd December 1913	3719	14th October 1910.
Cooksey, Wilfred	171	Ditto	3514	4th January 1913.
Barraclough, Francis Alan	172	Ditto	3291	6th January 1909.
Martyn, Joseph King	173	Ditto	4156	28th June 1912.
Howieson, David	174	Ditto	3060	31st December 1907.
Evans, Frederick Whitehead	175	Ditto	3871	3rd July 1911.
Allison, Lancelott	176	Ditto	3259	3rd September 1908.
Hughes, Clifford Edward	177	Ditto	4133	28th June 1912.
Shields, William	178	Ditto	2725	21st December 1905.
Caldwell, John Threlfall	179	Ditto	2481	22nd June 1904.

(*b*) Certificates of competency.

FIRST CLASS.

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Rayneau, Cyril Alexander	64	17th March 1913.	
Guise, Archibald Henry Charles	65	Ditto.	
Bhattacharji, Guru Dass	66	Ditto.	
Akone, Joseph Pogose	67	Ditto.	
Mokadam, Baliram Pandurang	68	Ditto.	
Kanungoe, Manindra Chandra	69	Ditto.	

SECOND CLASS.

Knyvett, Godfrey Denzil	75	17th March 1913.	
Chatterji, Sudhir Mohan	76	Ditto.	
Bose, Hira Lal	77	Ditto.	
Robertson, Andrew	78	Ditto.	
Laing-Martin, C.E.	79	Ditto.	
Pal-Chowdhury, Khirode Chandra	80	Ditto.	
Bhattacharji, Jnanendra Nath	81	Ditto.	
Hyde, George William	82	Ditto.	
Bapty, Frederic	83	Ditto.	
Banerji, Nidersan	84	Ditto.	
Banerji, Pulin Behari	85	Ditto.	
McGrath, Albert Edward	86	Ditto.	
Pal, Dulal Chand	87	Ditto.	
Sarkar, Manindra Nath	88	Ditto.	
Booth, Arthur Emery	89	Ditto.	

(*c*) Certificate of service.

FIRST CLASS.

Ghosh, Protap Chandra	136	4th February 1913.	

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 3.

List of Universities and Colleges in England and India approved by the Governor-General in Council for the purposes of Rules 32 and 33 under the Indian Mines Act, 1901.

Name of Institution and Degree or Diploma.	Date.
University of Birmingham in respect of its Degree of B.Sc. in Mining and Diploma in Mining.	11th June 1904.
University College of Bristol in respect of its Senior Diploma in Mining.	16th September 1904.
University of Cambridge in respect of its Diploma in Mining Engineering.	6th June 1905.
University of Durham in respect of its Degree of B.Sc. in Mining	21st December 1903.
Durham College of Science in respect of its Diploma in Mining .	29th June 1904.
University of Glasgow in respect of its Degree and Diploma in Mining.	28th September 1904.
Glasgow and West of Scotland Technical College in respect of its Diploma in Mining.	28th June 1904.
University of Leeds in respect of its Degree of B.Sc. in Mining and Diploma in Mining.	21st November 1904.
University of London in respect of its B.Sc. Degree in Mining for Internal Students, subject to the Degree being endorsed by the University with a certificate of four months' practical experience in a mine.	9th June 1905.
University of London in respect of its B.Sc. Degree in Mining for External Students, subject to the Degree being endorsed by the University with a certificate of four months' practical experience in a Mine.	7th August 1906.
Royal School of Mines in respect of its Associateship in Mining .	24th March 1904.
University of Oxford in respect of its Diploma B. for Colliery Engineers (in Scientific Engineering and Mining subjects).	11th February 1905.
University College of Sheffield in respect of its Diploma in Mining.	15th July 1904.
University College of South Wales and Monmouthshire in respect of its Diploma in Mining.	19th April 1904.
Wigan Mining and Technical College in respect of its Diploma in Mining.	26th August 1904.
Civil Engineering College, Sibpur, in respect of its Diploma in Mining.	22nd February 1907.
Merchant Venturers' Technical College, Bristol, in respect of its Diploma in Mining Engineering.	5th October 1905.
Victoria University of Manchester in respect of its Degree and Certificate of Mining.	14th February 1906.
University College of Nottingham in respect of its Diploma in Mining Engineering.	28th March 1906.
University of Sheffield in respect of its Degree of Bachelor of Engineering. (Mining.)	30th June 1906.
Heriot-Watt College in respect of its Certificate in Mining Engineering.	16th January 1908.
Calcutta University in respect of its Degree of Bachelor of Engineering in the branch of Mining Engineering.	24th September 1910.
Harvard University, Cambridge, Massachusetts, in respect of its Diploma in Mining Engineering.	22nd February 1913.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 4.

SIBPUR COLLEGE.

Apprentice Department.

THE MINING CLASSES.

CIRCULAR.

General explanation.—The Mining Classes are designed to afford theoretical training in the principles of mining generally, to prepare students for positions of responsibility in coal or metal mines, and, in the case of students attending for instruction in coal mining, to qualify them to appear for the examinations of mine managers, as required by the Indian Mines Act, VIII of 1901.

Students obtaining the College "*Diploma in the Principles of Mining*" may be granted a reduction of two years in the qualifying period of practical work upon a coal mine required of candidates for a Colliery Manager's certificate.

The course for *regular mining students* will extend over four years. During the first two years students follow the general course that prepares them for the Sub-Overseer Examination of the Joint Technical Examination Board. The specialised instruction in mining is given in the third and fourth years of the college course and the diploma examination takes place at the end of the fourth year.

During each year of the mining course students are required to attend the college camp of practical mining and surveying, which is held in the coal fields.

Special students.—Persons resident in Bengal, who have been employed upon mines, will be admitted as special students to two years' mining course under the following conditions :—

(*a*) that they have completed at least two years' practical work upon a mine; and

(*b*) that they have passed (*i*) the B. Final Examination, (*ii*) the Matriculation or Entrance Examination of any Indian University, or (*iii*) any test equivalent to the Middle School Examination of the Code for European Schools.

Age.—Regular students must be under 18 on the 1st of January of the year of admission if admitted to the first-year class, and under 21 if admitted to the third-year class. There is no limit of age for special students.

All applications for admission from outside candidates should be posted so as to reach the Principal's office by 1st March.

Regular students should apply in the proper form available from the Principal's office.

Special students must provide, (*a*) proof of educational attainments, and (*b*) a statement showing the nature and extent of their employment upon mines and the period thereof, supported by certificates from the mine managers under whom they have worked.

Scholarships.—For regular students two scholarships of Rs. 12 monthly and three of Rs. 6 are provided. These will be awarded on the results of the Sub-Overseer Examination by the Director of Public Instruction on the recommendation of the Principal. Students trained at the Civil Engineering College or any affiliated technical school in Bengal are eligible for these scholarships. If they are on the reduced fee list, they will be charged full tuition fees.

The session begins each year on, or about, the first Monday in April. The college closes for the long vacation about the second week of August and re-opens on the first Monday in November.

The following are the college fees which must be paid on the 15th of the month for which they are due :—

Initial.

	Rs.	
Mess entrance fee	2	Non-returnable.
Athletic club entrance fee	1	
Caution money deposit	5	Which, if applied for within three years of leaving college, will be returned after deducting any dues outstanding.

Monthly.

	Rs.	
Tuition	3	(Due for 12 months).
Electric light	1	(„ 10 „).
Athletic club	1	(Due in March, June and November).

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 4—*contd.*

Boarding—

Hindus	10	During term of 9½ months.
European	25	
Hindus	1	During vacation of 2½ months.
Europeans	2	

The Syllabus of Instruction of the Mining Class is published in the College Calendar, price twelve annas.

B. HEATON,

Principal, Civil Engineering College.

June 1913.

SYLLABUS OF MINING COURSES.

Course I.

Geology applied to mining.—(One lecture per week).

Classification of rocks: characteristic fossils and economic products of the principal systems.

Structure of rock; foldings, faults, cleavage, formation of mineral veins.

Principles of geological surveying: methods employed in constructing geological maps and sections. Special reference to the geology of India.

Mining Engineering.—(Two lectures per week.)

Boring by hand and power machines.

Sinking and lining shafts; various methods employed in special cases.

Systems of haulage, underground and aboveground, ærial ropeways.

Hoisting, headgear, ropes, safety appliances.

Mining legislation.

Section A.—(One lecture per week.)

Methods of working coal, shafts, pillars, preliminary work, and various methods of working the seams. Special reference to thick coal working as practised in England and different parts of the world.

Shot-firing; coal-cutting by machinery.

Surface subsidence and under-sea working.

Timbering and other supports.

Coal mine plans and sections, connecting surface and underground surveys.

Section B.—(One lecture per week.)

Prospecting for and methods of working mineral veins.

Alluvial mining and open workings.

Hydraulic mining; dredging for gold; ore-beds and deep leads, overhand and underhand stopping.

Hand and power drilling; blasting, timbering.

Metal mine plans.

Course II.

Descriptive Mineralogy.—(One lecture per week).

Physical properties of minerals; description of various ores and fuels; methods of determination.

Prospecting operations.

Mining Engineering.—(Two lectures per week during first-half of session.)

Drainage of mines; adits, levels; pumping machinery; dams; boring against old workings.

Ventilation of mines; natural and artificial ventilation; splitting and regulating air-currents; types of fans; water-gauge and anemometer.

Power-application in a mine; discussion of relative merits of steam, water, compressed air, electricity and oil, as sources of applied power.

Section A.—(One lecture per week.)

Description of gases found in coal mines; colliery explosions; safety lamps; instruments for detecting fire-damp; treatment of men overcome by foul air.

Arrangement of surface works at a colliery; sorting and screening coals; coal-washing, briquette making, coking and bye-products.

Section B.—(One lecture per week).

Surface works of metal mines, sorting, crushing, sizing and concentration of various ores. Modern ore-dressing machinery, and slime tables.

Special reference to treatment of gold, silver, copper, lead and zinc.

Cyanide and Chlorine treatment of slimes.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 5.

MINING INSTRUCTION IN BENGAL AND BIHAR AND ORISSA.

[*The Mining Educational Advisory Board desire that Colliery Managers will kindly publish this information in their collieries. An appeal is also made to them to support the lectures by seeing that members of their colliery staff who are suitable take advantage of the lectures and attend them regularly.*]

RANIGANJ AND JHARIA COAL-FIELDS.

LECTURES will be delivered throughout the session at the following centres:—

Place and time.	*Lecturer.*
(1) Lecture-room near Sijua Station, on Tuesdays, at 6-30 P.M.	Mr. B. Starks Field.
(2) Lecture-room near the Jharia Club, on Mondays, at 5-30 P.M.	„ L. A. Jacobs, B.Sc. (Dun.), M.I.M.E.
(3) Lecture-room at Messrs. Apcar and Company's Charanpur Colliery, on Fridays, at 5-30 P.M.	„ H. C. Read, B.Sc (Birm.).
(4) Lecture-room near Dishargarh Club, Wednesdays, at 5-30 P.M.	„ C. E. Ashcroft, F.G.S.
(5) Railway Institute, Raniganj, on Saturdays, at 4-30 P.M.	„ H. C. Read, B.Sc. (Birm.).

The course of instruction, consisting of not less than 25 lectures, will commence the last week in October and end in the following May. An examination will be held on 1st Monday in June 1914, and candidates who pass the examination will receive a certificate recording their success. No candidate will, however, be permitted to sit for the examination unless he has attended 50 per cent. of the lectures and received 40 per cent. of the marks allotted for home work.

All Europeans and English-speaking Indians are cordially invited to attend.

The following Sub-Committees have been appointed for each centre:—

RANIGANJ DISTRICT.

Dishargarh Centre.

Mr. G. C. Leach, *Chairman.*
„ Glen George.
„ J. Mackintosh.
„ Geo. Miller.
„ F. Owen.
Babu M. N. Ray (Begunia).
„ H. P. Mukherji (Chota Dhemo).
„ D. C. Tarafdar.
The Local Lecturer, *Secretary.*

Charanpur Centre.

Mr. C. J. E. David, *Chairman.*
„ T. Samson.
„ R. Mitchell.
„ E. M. Patterson.
„ A. Russell.
Babu Atul Sasi Mitra.
The Local Lecturer, *Secretary.*

Raniganj Centre.

Mr. C. J. E. David, *Chairman.*
„ P. S. Keelan.
„ A. G. Bennertz.
„ W. J. Rees.
Babu Promotho Nath Hazra.
„ Bejoy Krishna Banerji.

JHARIA DISTRICT.

Jharia Centre.

The Chief Inspector of Mines, *Chairman.*
Mr. T. Adamson.
„ R. G. M. Bathgate.
„ R. J. Browne.
„ A. S. Thomson.
Babu Bhupati Mukherji.
„ Sita Nath Dutta.
The Local Lecturer, *Secretary.*

Sijua Centre.

Mr. R. R. Simpson, *Chairman.*
„ A. Agabeg.
„ E. S. Bennertz.
„ J. S. Kean.
Babu Moti Lal Raha.
„ Surendra Nath Sarkar.
The Local Lecturer, *Secretary.*

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 5—*contd.*

JHARIA DISTRICT.

A proposal to open a centre at Mugma is under consideration.

Particulars of the Sibpur College Mining classes may be obtained from the Principal of the College. Instruction is given in Methods of Mining, General Engineering, Mechanics, Surveying, Science, Mineralogy and Workshop practice. On completion of the course (4 years for beginners and 2 years for those having previous mining experience and requisite educational qualifications) a diploma is granted to successful students, and the time spent may reduce by two years the time required for the Mine Manager's certificate.

SYLLABUS OF THE COURSE OF INSTRUCTION.

The course will treat principally of the more practical operations in actual mining, **with special reference to India,** and the principles underlying such operations will be thoroughly discussed. Special attention will be paid to the various methods of working thick seams. Sketches illustrating the lectures will be distributed free of charge.

At the close of each lecture questions will be set for home work.

FIRST-YEAR COURSE.

1. *Geology.*—General structure of the crust of the earth ; descriptions of fault, dykes, outcrop, dip, strike, unconformity, etc. ; composition and properties of coal ; special reference to the coal measures in India : importance of recording results of observations.

2. *Exploration.*—Advantages of borings ; driving through faults, wash-outs, dykes, methods of maintaining the direction and gradient of such drivages.

3. *Boring and winning.*—Different systems of boring ; choice of methods ; cost of boring ; winning coal by inclines, adits, shafts and cross-cut.

4. *Sinking.*—Site of colliery ; position of shafts, excavation and shape ; blasting with use of safety fuse and electric battery ; explosives and detonators, their safe storing and handling ; sinking and how to deal with difficulties : apparatus and tools used ; lining-shafts and scaffolding ; pitbanking arrangements.

5. *Opening out and methods of working, surveying.*—Shafts ; pillars ; arching or supporting the pit bottom ; quarrying ; pillar and stall ; double road stall ; long wall ; panel systems.

6. *Timbering and supporting.*—Fixing of props and double timber, chocks or cogs; special methods of timbering to withstand pressure from the roof, sides and floor, securing dangerous holes in the roof due to heavy falls ; use of iron or steel girders ; stowing and packing ; arching.

7. *Gases met with in coal mines.*—Their experimental preparation by chemicals, and illustration of their physical and physiological properties ; methods of detecting ; explosion and gob fires.

8. *Ventilation.*—Natural and artificial methods ; coursing the air ; use of stoppings, brattices, doors, air bridges, regulators ; measuring the quantity of air, use of thermometer, barometer ; water-gauge anemometer ; the friction of air in mines and the elementary theory of splitting.

9. *Safety lamps.*—Theory of safety lamps, Sir Humphrey Davy's experiment ; the Davy lamp, the Clauny and Thomas and Williams lamps, the Marsaut and Mueseler lamps ; fire-damp detectors.

SECOND-YEAR COURSE.

1. *Mechanical Engineering of collieries.*—Winding engines, discussion of the different types, calculation of the dimensions of cylinders, length of stroke, diameter of drum, etc. ; strength of winding ropes and chains, detaching hooks, capping winding ropes, care and examination of ropes.

2. *Pumping.*—Importance of a good system ; measurement of quantities of water ; lifting and forcing pumps ; pumps for sinking ; temporary and permanent pumps ; calculation of dimensions of pumps to perform a given duty, strength of pipes, methods of supporting ; different types of joints.

3. *Hauling.*—Tramways, tubs and waggons ; conveyance by self-acting inclines ; single-rope haulage ; main and tail ; endless rope ; endless chain ; calculations concerning inclines, sizes of haulage engines, ropes, etc. ; signalling ; capping of haulage ropes.

4. *Methods of working and ventilation.*—Revision of first year course work, followed by a fuller treatment of these subjects.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 5—*concld.*

5. *Surface arrangements.*—Boilers : Cornish, Lancashire, and water-tube types ; boiler fittings, injectors, and steam-pipes, etc. ; boiler explosions, incrustation, corrosion and priming ; calculations of boilers. Heap steads ; arrangement of roads around pit bank ; simple screening and sizing.

6. *Transmission of power.*— By steam, compressed air, and electricity, discussing the relative merits of each system.

Text books recommended.— Peel's or Kerr's Elementary Mining ; O'Donoghue's Mining Arithmetic.

W. H. EVERETT,
(Offg. Supdt. of Industries, etc.),
Secretary to the Mining Educational Advisory Board,
Writers' Buildings, Calcutta.

Statement No. 6.

LAND ACQUISITION (MINES) ACT, 1885.

Particulars required to be furnished by colliery owners to Local Governments when giving notice under Section IV of the Land Acquisition (Mines) Act, 1885, of their intention to work coal under land acquired for a railway.

(*a*) The name, residence and profession of the person giving the notice.

(*b*) The name of the mine together with that of the village and district in which the mine is situate.

(*c*) The name of the railway line or of the siding and the main line to which the siding is attached, under which the mine is situate.

(*d*) The names of the railway stations and the mileage between which the said siding or the said portion of the railway land, under which the mine is situate, falls.

(*e*) The number and date of the declaration under which the land was acquired.

(*f*) A tracing showing the boundaries of and the area over which the acquired land extends

Statement No. 7.

NOTIFICATION.

No. 4100.—The 19th August 1913.—In exercise of the powers conferred by Section 11 of the Bengal Mining Settlements Act, 1912 (Bengal Act II of 1912), the Governor in Council is pleased to make the following rules for carrying out the purposes and objects of that Act in respect of all mining settlements and certain groups or classes of mining settlements in the Presidency of Fort William in Bengal.

RULES.

PART I.

RULES FOR THE NOMINATION BY OWNERS OF MINES OR THEIR REPRESENTATIVES OF PERSONS TO BE APPOINTED TO A MINES BOARD OF HEALTH UNDER SECTION 3 (2) OF BENGAL ACT II OF 1912.

Definition. 1. In these rules—

(*a*) the expression "Magistrate" means the Magistrate of the district and includes a Deputy Commissioner of a district ;

(*b*) the expression "the Act" means the Bengal Mining Settlements Act, 1912 ;

(*c*) the expression "Board" means the "Mines Board of Health."

Register of voters.

2. (1) A register shall be maintained by the Magistrate in which shall be shown for the area for which the Board is to be appointed the name, place of residence, and number of votes to which he is entitled of the owner of every mine or of the representative of every such owner who is entitled to nominate persons to be appointed to the Board.

(2) If a person is the owner of more than one mine all such mines shall be grouped together in one entry, and if a colliery or mine is owned by more than one person the name of one owner or representative only shall be entered.

Applications for registration.

3. (1) Any mine-owner or his representative may, on or before a date to be fixed by the Magistrate, apply to have his name registered. Such application, which may be made by post, shall contain full particulars of the collieries or mines of which the applicant is owner or representative.

(2) The Magistrate shall on receipt of such application register the name of the applicant:

Provided that, for reasons to be recorded in writing, he may refuse to register the name of any such applicant.

Power of Magistrate to register or remove names.

4. The Magistrate may of his own motion register or remove from the register (for reasons to be recorded in writing) the name of any mine owner or his representative:

Provided that such name shall not be removed until the expiry of fifteen days from the service of a notice on the person whose name the Magistrate proposes to remove from the register.

Mutation of names.

5. Mutation of names shall be effected by the Magistrate either on application or of his own motion.

Provided that the reasons for refusing an application shall be recorded in writing.

Appeals to Commissioner.

6. In the case of an order passed by the Magistrate rejecting an application to be registered, removing the name of a person already on the register or rejecting an application for mutation of names, an appeal shall lie to the Commissioner of the Division if filed within 30 days from the date of the order. The decision of the Commissioner shall be final.

Classification of voters.

7. (1) Persons whose names have been entered in the register shall be classified as follows:—

Class A.—Owners of mines with an average output, for each of the preceding three years, of 400,000 tons or more, or representatives of such owners.

Class B.—Owners of mines with an average output, for each of the preceding three years, of 350,000 tons or more, or representatives of such owners.

Class C.—Owners of mines with an average output, for each of the preceding three years, of 300,000 tons or more, or representatives of such owners.

Class D.—Owners of mines with an average output, for each of the preceding three years, of 250,000 tons or more, or representatives of such owners.

Class E.—Owners of mines with an average output, for each of the preceding three years, of 150,000 tons or more, or representatives of such owners.

Class F.—Owners of mines with an average output, for each of the preceding three years, of 100,000 tons or more, or representatives of such owners.

Class G.—Owners of mines with an average output, for each of the preceding three years, of 50,000 tons or more, or representatives of such owners.

Class H.—Owners of mines with an average output, for each of the preceding three years, of 25,000 tons or more, or representatives of such owners.

Class I.—Owners of mines with an average output, for each of the preceding three years, of 5,000 tons or more, or representatives of such owners.

Class J.—Owners of mines with an average output, for each of the preceding three years, of less than 5,000 tons, or representatives of such owners.

(2) The classification shall be determined by the Chief Inspector of Mines.

(3) Persons in Class A shall be entitled to sixteen votes, in Class B to fourteen votes, in Class C to twelve votes, in Class D to ten votes, in Class E to seven votes, in Class F to five votes, in Class G to four votes, in Class H to three votes, in Class I to two votes, and in Class J to one vote.

Fixing of the date of election and issue of requisition to voters.

8. (1) When it becomes necessary that the Local Government should appoint one or more persons under section 3 (2) of the Act, the Magistrate shall fix a date on which the election shall be held and shall require each person entered in the register to forward to him on or before the date so fixed the names of the persons whom he desires to nominate for appointment.

(2) Such requisition, which shall ordinarily be forwarded by registered letter, shall contain the following particulars :—

(*a*) The number of persons to be appointed by the Local Government.

(*b*) The number of votes to which the voter is entitled.

(*c*) The hour and date on which votes will be counted.

Counting of votes and election.

9. (1) On the date fixed the Magistrate shall count the votes received and shall forward to the Local Government through the Commissioner of the Division the names of the persons who have received the largest number of votes.

(2) In the event of an equality of votes the Magistrate shall decide by lot which persons shall be recommended for appointment.

PART II.

RULES FOR THE NOMINATION BY PERSONS WHO RECEIVE ROYALTIES, RENTS OR FINES FROM MINES OF PERSONS TO BE APPOINTED TO A MINES BOARD OF HEALTH UNDER SECTION 3 (3) OF BENGAL ACT II OF 1912.

Register of voters.

10. (1) A register shall be maintained by the Magistrate of the district in which shall be shown for the area for which the Board is to be appointed, the name, place of residence and number of votes to which he is entitled of each person who receives royalties, rents or fines from mines.

(2) If such royalties, rents or fines be received by a number of sharers, the name of one only of such sharers shall be entered in the register.

Applications for registration.

11. (1) Any person who receives royalties, rents or fines may, on or before a date to be fixed by the Magistrate, apply to have his name registered. Such application, which may be made by post, shall contain full particulars of the mines in respect of which royalties, rents or fines are received, the amounts so received and the amount paid as road cess.

(2) The Magistrate shall, on receipt of such application, register the name of the applicant :

Provided that for reasons to be recorded in writing he may refuse to register the name of any such applicant.

Power of Magistrate to register or remove names.

12. The Magistrate may of his own motion register or, for reasons to be recorded in writing, remove from the register the name of any person who receives royalties, rents or fines from mines :

Provided that in the latter case previous notice shall be given to the person whose name the Magistrate proposes to remove.

Mutation of names.

13. Mutation of names shall be effected by the Magistrate on application or of his own motion :

Provided that the reasons for refusing an application shall be recorded in writing.

Appeal to the Commissioner.

14. (1) In the case of an order passed by the Magistrate rejecting an application to be registered, removing the name of a person already on the register or rejecting an application for mutation of names, an appeal shall lie to the Commissioner of the Division, if filed within 30 days from the date of the order.

(2) The decision of the Commissioner shall be final.

Classification of voters.

15. (1) Persons whose names have been entered in the register shall be classified as follows :—

Class A.—Persons who have during the preceding year paid Rs. 100 or less as road cess.

Class B.—Persons who have during the preceding year paid more than Rs. 100 but not more than Rs. 500 as road cess.

Class C.—Persons who have during the preceding year paid more than Rs. 500 but not more than Rs. 1,000 as road cess.

Class D.—Persons who have during the preceding year paid more than Rs. 1,000 but not more than Rs. 2,500 as road cess.

Class E.—Persons who have during the preceding year paid more than Rs. 2,500 but not more than Rs. 10,000 as road cess.

Class F.—Persons who have during the preceding year paid more than Rs. 10,000 as road cess.

(2) Persons in Class A shall be entitled to one vote, in Class B to two votes, in Class C to four votes, in Class D to eight votes, in Class E to ten votes, and in Class F to sixteen votes.

(3) The classification shall be determined by the Magistrate of the district.

Election.

16. When it becomes necessary that the Local Government should make an appointment under section 3 (3) of the Act the Magistrate shall hold an election in the manner prescribed in Rules 8 and 9 in Part I of these Rules.

PART III.

Rules regarding the Tenure of Office of Members of a Mines Board of Health.

Term of office.

17. (1) Every member of the Board shall vacate his office at the end of three years from the date of the order of the Local Government appointing the Board. The term of three years mentioned in this rule shall be held to include any period which may elapse between the expiration of the said three years and the first meeting of the newly appointed Board at which a quorum shall be present.

Filling of vacancies.

18. If any member of the Board who has been appointed under section 3 (2) or section 3 (3) of the Act shall be unable to complete his full term of office, the Magistrate shall, for the purpose of filling the vacancy, hold an election in the manner described in Rules 8 and 9 in Part I of these rules.

Removal of members on account of absence.

19. The Commissioner of the Division may remove any member of the Board if he absents himself from eight consecutive meetings of the Board without the permission of such Board.

PART IV.

Rules Regulating the Procedure of a Mines Board of Health and the Powers and Functions of the Chairman.

Date of meeting and notice.

20. (1) Ordinarily a meeting of the Board shall be held once a month on a date to be fixed by the Chairman, but as many meetings may be held and at such times as the Chairman may direct.

(2) At least one week's notice of all meetings shall be given to each Member.

Vice-Chairman.

21. (1) At the first meeting held after the appointment of the Board the members shall elect one of their number to be Vice-Chairman.

Chairman.

(2) The Chairman, or in his absence the Vice-Chairman, shall preside at every meeting and in the absence of both the Chairman and Vice-Chairman the members present shall choose one of their number to preside.

Quorum.

22. (1) The quorum necessary for the transaction of business shall be three.

(2) If at any meeting a quorum is not present, the member who presides shall adjourn the meeting until such other day as he thinks fit. At such adjourned meeting any number of members present will form a quorum.

Voting by proxy prohibited.

23. (1) Voting by proxy shall not be permitted.

Casting vote.

(2) In the event of an equality of votes on any question brought before the Board, the presiding officer shall have a second or casting vote.

PART V.

Rules for the Regulation of Expenditure to be incurred by a Mines Board of Health and for the Calculation and Recovery of sums due to it.

Preparation of estimate.

24. (1) The Board small prepare, not later than the 1st day of January in each year, an estimate of receipts and expenditure (other than expenditure incurred under sections 7 and 8 of the Act) for the ensuing financial year.

(2) Such estimate shall be accompanied by a statement showing the total amounts to be recovered from (*a*) owners of mines, and (*b*) receivers of royalties, rents and fines, and showing also in each case the rate of assessment which it is proposed to impose under section 10 (3) of the Act.

25. Such estimate and statement shall be open to the inspection of the public at the office of the Board for a period of not less than fourteen days and on the expiry of that period the Board shall, after considering the objections, if any, which have been received, and after amending, if necessary, the estimate, forward it with full explanatory notes to the Commissioner of the Division for approval.

Inspection, consideration and submission of estimate.

26. The Commissioner may either sanction the estimate as it stands or approve of it after making such alterations therein as he may think necessary, or may return it to the Board for such modifications as he may think necessary, and when such modification has been made, the estimate shall be resubmitted for the approval of the Commissioner.

Sanction or return of estimate by Commissioner.

27. When a Board is first appointed, an estimate of receipts and expenditure for the remaining portion of the financial year shall be prepared and published in the manner prescribed in rules 24 and 25 and be submitted to the Commissioner for approval.

Estimate on first appointment of Board.

28. If during the course of the year it is necessary to revise the estimate, a revised estimate shall be prepared and published in the manner described in rules 24 and 25 and shall be submitted to the Commissioner for approval.

Revision of estimate.

29. The Board shall submit annually to the Commissioner, not later than the 15th of May, a report of the working of the Board during the previous year, accompanied by statements showing the actual receipts and expenditure as well as statements showing in detail—

Annual Report.

(*a*) the expenditure incurred under sections 7 and 8 of the Act,

(*b*) the amounts recovered under section 10 (2) of the Act, and

(*c*) the payments made to holders of land under section 10 (5) of the Act.

30. The account and audit rules prescribed under the Bengal Local Self-Government Act of 1885 for District Boards shall, so far as possible, be observed by the Board.

Account and Audit Rules.

PART VI.

Rules prescribing the Duties of Owners, Agents and Managers of Mines in respect of Mining Settlements and of all Persons acting under them.

31. Every mine owner and every employé of a mine owner shall be bound, when called upon, to render all reasonable assistance to officers of the Board in carrying out their duties.

Obligation of owners and employés to assist officers of Board.

32. Every mine owner and manager shall be bound to supply to the Board such periodical returns of births and deaths as they may be called upon to furnish.

Returns of births and deaths.

33. Every mine owner and manager shall be bound to furnish to the Chief Sanitary Officer of the Board immediate information regarding the occurrence of any case or suspected case of cholera, plague or small-pox.

Information of cholera, plague or small-pox.

34. Every mine owner and manager shall be bound to supply to the Board such periodical returns of output as they may be called upon to furnish, and the Board may, for the purpose of verifying such returns, inspect or call for the production of any registers or books.

Returns of output.

PART VII.

Rules for Sanitation and Conservancy in Mining Settlements for the taking of Measures to prevent the Outbreak or Spread of Epidemic Disease and to regulate the Duties and Powers of Sanitary Officers.

35. The Board may establish and maintain burning ghats and burial-grounds and may, by general order, direct that in the whole or any specified part of the Mining Settlement, corpses shall not be burnt or buried at places other than those provided for the purpose.

Provision of burning ghats and burial grounds.

36. (1) The Board may issue a written order on any mine owner, manager, or landholder directing him to close or empty within a time to be stated in the order, and for such time as may be specified therein, any well, tank or other source of water-supply situate within or partly within his property which, in the opinion of the Chief Sanitary Officer is contaminated, and, in the event of the work not being carried out within the time stated in the order or to the satisfaction of the Chief Sanitary Officer, the Board may itself carry out the work.

Closing of wells, tanks and sources of water supply.

(2) The powers granted by this rule may be delegated by the Board to its Chief Sanitary Officer.

37. The Board may delegate to its Chief Sanitary Officer power—

Delegation of powers to Chief Sanitary Officer to seize bad food and dispose of corpses.

(*a*) to seize and destroy any articles of food or drink which in his opinion are unfit for consumption ;

(*b*) to seize and dispose of the corpse of any person who he has reason to believe has died of any epidemic disease.

Disinfection and evacuation of houses.

38. (1) The Board may issue a written order on any mine owner, manager or landholder directing him to carry out, within a time to be stated in the order, such measures for the disinfection or evacuation of dwelling-houses, or for the destruction of infected bedding or clothing as the Chief Sanitary Officer may consider necessary, and in the event of such measures not being carried out within the time stated in the order, or to the satisfaction of the Chief Sanitary Officer, may authorize the Chief Sanitary Officer to carry out the work.

(2) The power granted by this rule may be delegated by the Board to its Chief Sanitary Officer.

Power of Board during epidemic to close shops or market.

39. (1) The Board may, during the prevalence of an epidemic, direct that any market shall remain closed for such time as may appear to be necessary.

(2) The power granted by this rule may be delegated by the Board to its Chief Sanitary Officer.

Sanction of Local Government required for exercise of certain powers.

40. The previous sanction of the Local Government shall be required for the exercise by the Board within any prescribed area within the mining settlement of all or any of the powers and functions specified in rules 41 to 60.

Removal of sewage and rubbish.

41. (1) The Board may provide establishments, cattle, carts and implements required for the removal of sewage, offensive matter and rubbish and may provide places convenient for the deposit thereof by occupiers of houses.

(2) Where such places have been provided, the Board may require the occupiers of houses to deposit the same daily or at stated intervals in such places.

(3) Where such places have not been provided, the Board may require every occupier of any house or land to place rubbish at stated hours on the public road adjacent to his house or land.

Drains, privies and cess-pools.

42. All drains, privies and cess-pools shall be subject to the inspection and control of the Board.

Inspection of drains, privies and cess-pools.

43. The Board, or any officer authorized by it in that behalf, may inspect all privies, drains and cess-pools at any time between sunrise and sunset, after two hours' notice in writing to the occupier of any premises in which such privies, drains or cess-pools are situated, and may, if necessary, cause the ground to be opened wherever the Board, or the officer authorized by it, may think fit for the purpose of preventing or removing any nuisance arising from such privies, drains or cess-pools.

Disinfection of privies, drains and cess-pools.

44. Whenever the Board is satisfied that the existence of such privy, drain or cess-pool is attended with risk of disease to the inhabitants of the neighbourhood, it may direct the use of such disinfectants or deodorants as it shall specify, in such privy, drain or cess-pool, in such quantities or for such time as it shall think fit.

Common privies and urinals.

45. The Board may provide and maintain common privies or urinals.

Clearance and drainage of waste land.

46. Whenever any land, being private property or within any private enclosure, appears to the Board by reason of thick or noxious vegetation or jungle, or inequalities of surface, to be likely to impede sufficient ventilation or to be otherwise injurious to health, or by want of drainage to be in a state injurious to health, or offensive to the neighbourhood, the Board may require the owners or occupiers, or the owners and occupiers of such land, within fifteen days, to clear and remove such vegetation or level such surface or drain such land :

Provided that if, for the purpose of effecting any drainage under this rule, it shall be necessary to acquire any land not being the property of the person who is required to drain his land, or to pay compensation to any other person, the Board shall provide such land and pay such compensation.

Control of public sewers and drains.

47. All existing public sewers, drains and other conservancy works shall be under the direction and control of the Board, who may construct such further works of that nature as they may consider necessary.

Provision of water.

48. The Board may, by order published at such places as it may think fit, set apart any well, tank, part of a river, stream or channel, not being private property, for the supply of water for drinking and for culinary purposes and may prohibit therein all bathing, washing of clothes or animals or other acts calculated to pollute the water ; and may similarly set apart any well,

tank, part of a river, stream or channel for the purpose of bathing, or for the purpose of washing animals or clothes or for any other purpose connected with the health, cleanliness or comfort of the inhabitants of the mining settlement.

Prohibition of pollution of public water-supply.

49. The Board may, by an order published at such places as it may think fit, prohibit in the private portion of any stream or channel used as a part of the public water-supply, bathing, washing of clothes or animals or any other act likely to pollute the water in the public portion of such stream or channel.

Prohibition of use of polluted water.

50. If the Chief Sanitary Officer of the Board certifies that the water in any well, tank or other place is likely, if used for drinking, to engender or cause the spread of any dangerous disease, the Board may prohibit the removal or use of such water for drinking during a period to be specified in the notice.

Power to order improvement of water-supply.

51. The Board may require the owner or occupier of any land within eight days, or such longer period as the Board may fix, either to re-excavate or fill up with suitable material, at his option, or to cleanse any well, watercourse, private tank or pool therein, and to drain off and remove any waste or stagnant water which may appear to be injurious to health or offensive to the neighbourhood :

Provided that if, for the purpose of effecting any drainage under this section, it shall be necessary to acquire any land not being the property of the person who is required to drain his land or to pay compensation to any other person, the Board shall provide such land and pay such compensation.

Power to order repair of drain, privy or cess-pool.

52. The Board may require the owners or occupiers, or the owners and occupiers of any land, within fifteen days to repair and make efficient any drain, privy or cess-pool, or to remove any privy or close any cess-pool which is situated on such land.

Unauthorised alteration of drain.

53. If any person, without the written consent of the Board first obtained, makes or causes to be made, or alters or causes to be altered, any drain leading into any of the sewers or drains vested in the Board, the Board may cause such branch drain to be demolished, altered, re-made, or otherwise dealt with as they shall think fit.

Power to direct drainage into sewer or drains.

54. If any land, being within one hundred feet of a sewer, drain or other outlet into which such land may, in the opinion of the Board, be drained, is not drained to the satisfaction of the Board, the Board may require the owner, within one month, to drain the said land into such sewer, drain or outlet.

Prohibition against latrines, urinals in proximity to tanks or watercourses.

55. (1) No person shall, without the written permission of the Board, construct or keep any latrine, urinal, cess-pool, house-drain, or other receptacle, for sewage or other offensive matter, within one hundred feet of any public tank or watercourse or a tank or watercourse which the inhabitants of any locality use.

(2) The Board may require any owner and occupier upon whose land any latrine, urinal, cess-pool, house-drain or other receptacle so situated exists, or may hereafter be constructed, to remove the same within eight days.

Removal of privies with doors opening on road.

56. No person shall, without the written permission of the Board, construct a privy with a door or trap-door opening on to any road or drain. The Board may require any owner or occupier upon whose land any such privy exists to remove the same within eight days.

Power to prohibit excavations.

57. (1) The Board may, by a general order, prohibit the making of excavations for the purpose of taking earth or stone therefrom, or for the purpose of storing rubbish or offensive matter therein, and the digging of cess-pools, tanks or undrained excavations without special permission previously obtained from them.

(2) If any such excavation, cess-pool or tank is made after the issue and publication of such order, without such special permission, the Board may require the owners and occupiers of the land on which such excavation, cess-pool or tank is made, within two weeks, to fill up such excavation.

Enquiry as to insanitary blocks of huts, and report.

58. Whenever the Board is satisfied, from inspection, or by report of competent persons that any existing block of huts within the mining settlement is, by reason of the manner in which the huts are constructed or crowded together, or of the want of drainage and the impracticability of scavengering, attended with risk of disease to the inhabitants of the neighbourhood, they may cause the locality to be inspected by two Medical Officers, who shall make a report in writing on the sanitary condition of the said block of huts ; and shall specify, if necessary, in the said report, the huts which should be removed, the roads, drains, and sewers which should be constructed and the low lands which should be filled up, with a view to the removal of the said risk of disease.

Power to enforce recommendations in report.

59. On receipt of the said report, the Board may require the owners or occupiers of the huts, or at the option of the Board, the owner of the land on which such huts are built, to carry out and execute, within a reasonable time, to be fixed by the Board for such purpose, all or any of the works specified in the aforesaid report or any portion thereof respectively, and if such owner, owners or occupiers shall fail to comply with such requisition, the Board itself may execute all or any of such works.

Drainage of slaughter-houses and places for sale of meat, fish and vegetables.

60. Every owner, or occupier, or farmer, of any place for the sale of meat, poultry, fish or vegetables, or of any slaughter-house, within the limits of the mining settlement shall cause such drains to be made therein as shall be considered sufficient by the Board and (if required so to do by the Board) shall cause all the floors and drains to be paved with stone or burnt brick, and shall also cause a supply of water to be provided, sufficient for keeping such place or slaughter-house in a clean and wholesome state.

H. F. SAMMAN,
Offg. Secy. to the Govt. of Bengal.

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